

Courtney Creek Forest Health and Riparian Restoration Project Environmental Assessment OR-035-00-5

Proposed Action: The proposed actions are designed to address the forest health, wildfire, and fisheries habitat concerns of the Courtney Creek area. The proposed actions include thinning forest stands, adding large woody debris to selected sections of Courtney Creek, Little Courtney Creek and Mud Creek, and seeding riparian vegetation. Forest stands outside of riparian buffers would be thinned from below, generally leaving larger trees and removing smaller trees. Both commercial and pre-commercial sized trees would be cut. Several (30-60) large trees adjacent to Little Courtney Creek would be felled to provide fish habitat and help stabilize dramatically eroding stream banks.

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Courtney Creek Forest Health Project

Environmental Assessment

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I - Purpose and Need for the Proposed Actions

The project area is located in the upper portion of the Courtney Creek drainage of the Lower Grande Ronde River subbasin. The project area includes 779 acres of forest on BLM-managed land, located adjacent to Courtney and Little Courtney Creeks (see Maps 1 and 2). This environmental assessment analyzes two action alternatives that address the resource concerns in the area and respond to key issues identified through the scoping process. A “no action” alternative is also assessed. This document is tiered to the Baker Resource Management Plan (RMP) Record of Decision (ROD)(1989).

A. Desired Future Conditions

As part of the analysis, resource specialists identified desired resource conditions for the Courtney Creek area based upon current conditions and management direction. The overall desired future condition for the analysis area is to have a healthy, self-sustaining ecosystem that more closely resembles historic conditions and function.

B. Need for the Proposed Actions

Forest stands in the Courtney Creek area are very dense. Historically, wildfire acted as a natural thinning and stand replacement agent within these stands. With the exclusion of fire, many of the forested areas have developed a dense understory of smaller, younger trees and brush, resulting in high fuel accumulations. Dense stand conditions also have reduced stand vigor and increased susceptibility to disease and insect infestation. As these stands continue to grow and tree competition increases, tree mortality also will increase.

Dense stand conditions also have substantially contributed to Douglas-fir dwarf mistletoe infestations, which are moderate to severe in pockets throughout the area. Douglas-fir dwarf mistletoe can reduce tree vigor and predispose individual trees to Douglas-fir bark beetle (*D. pseudotsugae*) attack. Bark beetle activity has been noted in the area and has killed pockets of both old and young trees.

There are pockets of standing dead trees and relatively large amounts of downed woody debris resulting from dwarf mistletoe infections and bark beetle attacks. These fuel loadings will increase as tree mortality increases. The understory trees and ninebark understory within these stands provide ladder fuels, which may allow fire to climb into the forest canopy. Because of the current and future fuel conditions, there is a potential for a hot crown fire to develop within these stands if a fire is ignited in the area.

The Courtney Creek drainage supports summer steelhead, rainbow trout, redband trout and possibly chinook salmon. Quality fish habitat is lacking in the Courtney Creek drainage due to actively eroding stream banks, subsurface flows and a lack of large woody debris (logs) within the stream channel.

C. Purpose for the Proposed Actions

The purpose of the proposed upland thinning is to increase tree vigor, reduce the incidence of insect and disease within the forested stands and reduce the potential for a stand replacing fire. The purpose of the proposed riparian seeding is to aid in stabilizing stream banks and reduce erosion. The purpose of felling large trees into Little Courtney Creek is to provide pool habitat, decrease stream velocity, protect eroding stream banks, collect sediment, and help re-establish surface flows throughout the year. The purpose of the proposed thinning within the riparian areas is to increase tree vigor and provide a future source of large woody debris (LWD).

D. Management Direction

1. Land Use Plan

Management direction for the analysis area is set forth in the Baker Resource Area Management Plan Record of Decision, 1989 (ROD). The Courtney Creek Watershed is one of several watersheds in the Blue Mountain Geographic Unit, which is one of 14 units identified in the ROD. Specific resource condition objectives for this unit can be found on pages 101 thru 110 in the ROD. Resource objectives for forest land are to maintain or establish healthy and diverse forest lands in all age classes and

stocking levels, with at least 10 percent of the acreage in old growth habitat. Riparian objectives are to improve riparian habitat on poor to fair condition streams that support anadromous fish. For wildlife and fisheries habitat, objectives include meeting regional big game forage requirements and fishery habitat objectives recommended by the Oregon Department of Fish and Wildlife and maintaining or improving habitat for fisheries.

2. ICBEMP

The Interior Columbian Basin Ecosystem Management Plan (ICBEMP) may change existing land use management. Although much of the direction within RMPs will remain in place and would not be superseded by the ICBEMP Environmental Impact Statement (EIS), if approved, ICBEMP contains base-level direction that is basin-wide and would apply to Forest Service and BLM-administered lands across the entire basin. It provides broad-scale direction for the following land management issues: landscape processes and function; terrestrial habitats; aquatic, riparian, and hydrological resources; terrestrial and aquatic species; and social-economic-tribal considerations. Base-level direction would apply across the project area, unless superseded by more restrictive direction.

Although the Courtney Creek Environmental Assessment (EA) was conducted prior to a signed ROD for ICBEMP, pertinent direction from the preferred alternative and the proposed decision were incorporated into the project design and analysis.

3. Blue Mountain Demonstration Project

The Courtney Creek analysis area lies within the Blue Mountain Demonstration Area (BMDA). The Blue Mountains were selected as a Demonstration Area because its watersheds are considered high priorities for restoration and its communities are considered to be at risk economically and socially. The Blue Mountains also were identified as an area of poor aquatic and forest health, where wildlife and fish habitats, water quality, recreation uses, and commercially valuable forest products are at risk from wildfires, forest insects and diseases, noxious weeds, and roads.

The purpose of the BMDA is to promote watershed and community health through innovation and cooperation. Watersheds within the BMDA have been ranked based upon their restoration needs. For the 2001 watershed assessment ratings, the Courtney Creek watershed was assigned a high priority for investments in upland restoration and moderate priority for investments in aquatic restoration. The overall combined ranking for restoration within the watershed is high.

E. Decision to Be Made

The Baker Field Manager will determine how the available resources within the Courtney Creek area will be managed to best meet the intent of management direction set forth in the RMP and ICBEMP. The deciding officer must consider the needs of all resources in the analysis area and the appropriate management actions that will best meet those needs. Based on the EA, the Baker Field Manager may choose to implement one of the action alternatives or to defer action, i.e., opt for the “no action” alternative.

The deciding officer will also determine if the proposed actions are “major federal actions” requiring the development of an EIS. That determination will be made by assessing the significance of the proposed actions based on context and intensity (40 CFR 1508.27).

F. Issues

Several issues were identified as a result of interdisciplinary team discussions and public scoping. These issues were considered in the development of the proposed actions as well as in the development of alternatives. The following is a description of the issues identified and how the issues were addressed in the development of the proposed actions and alternatives. The key issues identified for the project are assessed throughout the analysis of effects.

1. Key Issues to be analyzed

a. Fish Habitat/Water Quality

The Courtney Creek drainage supports summer steelhead and possibly chinook salmon, both of which are federally listed threatened fish species. The drainage also provides habitat for rainbow and redband trout. Quality fish habitat is lacking in the Courtney Creek drainage due to actively eroding streambanks, subsurface flows and a lack of LWD within the stream channels. Further, stream temperatures exceed recommended levels. Thus, the quality of the fish habitat is a matter of concern.

This issue is part of the purpose and need for the proposed restoration work. However, the activities proposed to be undertaken within the Riparian Conservation Area pursuant to the proposed action, particularly the cutting of trees for large woody debris and the proposed thinning to promote the development of future large trees, also raise concerns. Specifically, there is a concern that these activities would compromise the integrity of the RCA even though they are designed to enhance fish habitat. In response to this concern, an alternative to the proposed action was developed that does not cut any trees within the RCA, but would do some limited riparian seeding.

b. Forest Health/Old Forest

Forest health concerns are part of the purpose and need for the proposed actions and are addressed in both of the action alternatives.

Dense stand conditions have reduced stand vigor and increased susceptibility to disease and insect infestation within the Courtney Creek area. Douglas-fir dwarf mistletoe infections are moderate to severe in pockets throughout the area. Dwarf mistletoe can reduce tree vigor and predispose individual trees to bark beetle attack. Bark beetle activity has been noted in the area and has killed some of the oldest, larger trees as well as some young trees.

All of the forest stands in the Courtney Creek area have a large tree component of 3-12 large diameter trees per acre. Some of the stands meet the ICBEMP standards for old forests. The commercial thinning which is proposed in the action alternatives includes project design features that protects old forest attributes. Part of the proposed action is to strategically fell several large trees (diameters greater than 20") into Little Courtney Creek as part of the stream restoration activities. How the removal of these large trees from the forest canopy would affect the old forest quality of the riparian areas is a concern, in response to which an alternative was developed whereby no large trees within the riparian conservation areas would be cut.

c. Wildfire/Fuels

Reducing the risk of loss from a high intensity wildfire is part of the purpose and need for the proposed actions. Forest stands in the Courtney Creek area are multi-storied, have a dense shrub layer, and are on steep slopes. Because of this combination of attributes, there is a high potential for a high intensity wildfire to develop if ignited. Protecting adjacent private lands as well as the natural resources of the area from a hot, high intensity wildfire is a concern. The design features intended to address this concern include removing ladder fuels from the thinned areas and removing all but the smallest thinned material from the landings rather than burning the low merchantable thinned material on the landings. This would greatly reduce the risk of escaped fire during burning operations.

d. Wildlife Habitat

The Courtney Creek area is very open with isolated forest stands surrounded by shrub and grasslands. The proposed action would thin forest stands so that they are more open with less canopy cover. There is a concern that the thinning would reduce the amount of suitable cover for the deer and elk in area. An alternative to the proposed action was developed to address this concern. Under this alternative, forest stands would not be thinned below effective canopy cover for big game.

2. Issues considered and eliminated from further analysis

The following issues were developed but eliminated from further analysis because they would not be impacted by the alternatives or were addressed in the formulation of project design features.

a. Air Quality

Pursuant to tree-cutting activities, slash would accumulate on the proposed landings as tree tops and limbs are removed. Part of the proposed action is to dispose of this slash by burning it. Smoke from these burning operations can contain high amounts of particulate matter and affect visibility. The effect this smoke may have on the local air quality is a concern.

This issue is addressed through mitigation measures that are part of the project design. Under both action alternatives, required smoke management procedures would be employed to prevent any violation of air quality standards. Also, all material brought to the landings except for small limbs and tree tops would be removed from the landings rather than burned. Therefore, only a small percentage of material would be burned at the landings.

b. Cultural Resources

Courtney Creek is within the traditional homeland of the Nez Perce Indians. Project area lands were ceded by the Nez Perce Tribe in the Treaty of 1855. Under the terms of the treaty, the Nez Perce reserved certain rights, including the right to fish at usual and accustomed places and to hunt, gather, and graze stock on unclaimed public lands in common with other citizens. Traditional resources generally found in the Courtney Creek watershed include anadromous fish in Courtney Creek, and culturally important plants on private land along the canyon ridges and at seasonally wet camas meadows.

Cultural resource inventories were performed in fall 2000 and spring 2001 on BLM and private lands. Intensive Class III inventories were conducted for areas of less than 30% slope where ground disturbing activities would be proposed. This included private lands where log deck landings and new roads could be located. Steep canyon slopes covered with dense, high undergrowth were examined by sampling transects and reconnaissance. Little Courtney Creek and the lower reach of main Courtney Creek within the project area were surveyed. Approximately 147 acres were surveyed on BLM land and 180 acres were surveyed on private land for potential landing and road locations. Any new or additional landings or roads proposed would require further BLM survey and authorization. A survey of the upper reach of main Courtney Creek will be completed during the 2001 field season, prior to implementation of stream restoration projects. Any cultural resources identified would be avoided.

Project design features were established to avoid cultural resources. Although no cultural resources were identified in the surveyed area of potential effect, one isolated artifact and part of a historic debris scatter were located nearby on BLM land. These properties are considered to be not eligible for the National Register of Historic Places. Several historic homesteads dating to the turn of the twentieth century and a hunting blind were identified on private lands, but would be avoided by the project. None of these properties would be affected by the proposed action or action alternatives.

c. Economics

The proposed action would use helicopters to remove the cut trees from the thinning areas. Indeed, both action alternatives would employ helicopters to yard material to the landings. The high cost associated with the use of helicopters is a concern. Upon consideration of this issue, it was determined that the need for resource protection outweighed the need to reduce yarding and slash disposal costs. The no action alternative would not cut any trees nor employ helicopters for tree removal.

d. Noxious Weeds

Noxious weeds are present in the analysis area, and ground disturbing activities have the potential to spread these weeds as well as introduce new weeds to the area.

One small infestation of yellow starthistle was found on public land on the north side of Courtney Creek in spring 2000. This site has not been treated but will be added to the 2001 treatment schedule. A small patch of Dalmatian toadflax was found in fall 2000 on private land near public land near the ridge top on the south side of Courtney Creek Canyon. A more thorough survey of nearby public land

will be conducted so as to more thoroughly document the presence of this weed. Diffuse knapweed is common in the area and is assumed to be found in these units as well, although no known sites have been located. These tracts also have the typical populations of mustards, hound's tongue, Canada thistle, bull thistle, etc. commonly found in Wallowa County. These species are not being treated at this time except coincidentally with other higher priority noxious weed species.

A Draft Environmental Assessment for the Vale District Integrated Noxious Weed Management Program was prepared in 2000. A Biological Assessment of the Vale District weeds program is being prepared and should be completed in 2001 as well. All mitigating measures and program design features identified and discussed in these documents are being compiled and will be implemented in this analysis area.

Canada thistle and bull thistle are expected to appear initially after thinning activity and on the landings, but eventually would be a minor component of most sites after 5 to 7 years. Noxious weeds of more concern such as yellow starthistle, diffuse knapweed, Dalmatian toadflax, and leafy spurge are all found in this general area in Wallowa County and have the potential to become established or increase within the project area as a result of the proposed actions. The helicopter logging method of thinning and yarding would minimize the amount of soil disturbing activities that could occur during implementation as compared to other possible methods, thereby reducing the risk of noxious weed establishment on the thinned units. Existing weed sites might increase if disturbed or adjacent ground is disturbed. The landings, although on private land, would be monitored for several years for possible weed establishment. The proposed new road construction and grader work on existing dirt access and haul roads also have the potential of spreading noxious weeds. These sites would be monitored for some time after completion of the project, with followup control treatment as necessary.

The seeding project proposed in the riparian areas along Courtney Creek and Little Courtney Creek would present a limited risk of introducing noxious weed species even though certified weed-free seed would be used. This seeding would be monitored for successful establishment of grass and sedge as well as for the infiltration of noxious weeds.

e. Soils

Soils in the Courtney Creek area have severe erosion potential. There is a concern that unacceptable erosion could occur with too much ground disturbance from management actions and/or fire. During field review, potentially unstable areas were identified in the forested areas. Indicators of unstable areas include old slumps and slides, jackstrawed trees, and excessively steep slopes. There is a concern that management activities conducted in these areas could trigger slumps or slides.

The soils in the Courtney Creek area are complexes of several soil types. Three complexes have been identified in the project area. They are the Threebuck, Snell and Harlow, and Tamarack Canyon complexes. They are all north facing and have rooting depth of 40-60 inches, except the Snell-Harlow-Imnaha Complex (20-40 inches and the Harlow-Threebuck Complex (10-20 inches). All of these soil complexes are well-drained. They have a water capacity of only 3-6 inches, except the Harlow-Threebuck Complex, which has a capacity of 1.5 inches. The water erosion hazard is severe for all soil types, particularly in areas in which there is little plant cover or surface litter protecting the surface layer. Cool soil temperatures and a short growing season limit the period of plant growth. Any loss of soil can cause a change in vegetation and its production.

Special precautions on Threebuck and Tamarack canyon soil complexes may be needed to control soil loss following activities that expose bare soil. Steep slopes limit the use of ground based equipment. Trees on these soils may be blown down when the soil is wet and winds are strong due to depth to bedrock. Further, the soil is susceptible to compaction. Erosion control measures are needed to reduce soil loss from cut and fill slopes and any areas where heavy equipment is used.

Threebuck soils bear hazards of soil displacement, puddling, dustiness, plant competition and fire damage. Threebuck and Linecreek soils may necessitate special precautions and erosion control measures following any activity that creates bare soil. Uncontrolled competing vegetation may retard

reforestation on both of these soils. Prescribed burning or natural fire of moderate intensity on these soils may result in loss of soil, loss of nutrients and water repellency.

Snell and Harlow soils have clay at the lower layers, which expands when wet and contracts when dry, which can damage plant roots and thereby restrict rooting depth. The shallow bedrock in the Harlow soil also restricts rooting depth. Erosion of the easily disturbed surface layer in the Harlow soil causes changes in sites bearing this soil, and loss of potential for production of vegetation.

Tamarack Canyon soils are similar to the Threebuck soils in the sense that they are highly erosive, easily compacted and easily damaged by machines. Tamarack Canyon soils also are susceptible to sheet and rill erosion, puddling, dustiness, plant competition and windthrow hazard. Trees on Tamarack Canyon soils may suffer blowdown when the soil is wet and winds are strong, due to depth of the associated bedrock. This issue is addressed through design features common to all action alternatives, to wit, minimization of ground disturbance through the use of helicopters to yard logs, a ban on road building in areas with severe erosion potential and a ban on prescribed fire on steep slopes in the area. No management activities would take place in potentially unstable areas.

f. Range

Three range leases (#6617, 6631, & 6574), which authorize a total of 228 AUMs, exist within the Courtney Creek project area. The BLM land subject to these leases is intermingled with private land. Elevations on these leases range from approximately 2200 to 4000 feet. Plant communities range from bluebunch wheatgrass/Idaho fescue on steep hillsides to densely vegetated riparian areas. Much of the area is inaccessible to livestock due to steep topography, which limits grazing to the upper benches. Grazing seldom impacts these areas. The three existing leases are monitored for livestock presence with periodic flights throughout the grazing season, pursuant to section 7 of the Endangered Species Act. No cattle were seen on any of these leases between April and November 2000.

The BLM, through the development of the final grazing regulations (1995), was directed to formulate State or regional standards and guidelines for rangeland health. The objectives of these new regulations are to promote healthy, sustainable rangeland ecosystems, to accelerate restoration and improvement of public rangelands to properly functioning conditions, and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy rangelands. Statewide standards and guidelines were developed for Oregon and Washington and finalized on August 12, 1997, after a process which incorporated public participation and assistance from the Resource Advisory Councils.

In July 1998, the Oregon/Washington BLM State Office provided the various districts with a strategy for implementing the new Standards and Guidelines (S & Gs). These S & Gs address the following issues: Upland Watershed Function, Riparian/Wetland Watershed Function, Ecological Process, Water Quality, and Native Threatened and Endangered Species (T & Es), and Locally Important Species. In the event that any standard is not met, and the cause is attributed to current livestock management, the BLM is required to make needed management changes that will move conditions towards meeting that standard. The guidelines for livestock grazing management are presented in detail on pages 15-18 of the final version of "The Standards for Rangeland Health and Guidelines For Livestock Management for public lands administered by the Bureau of Land Management in the states of Oregon and Washington" (August, 1997). Although independent of this analysis, reference to the S & Gs are presented as additional information to this document.

Within the Courtney Creek analysis area, all three grazing leases mentioned above were assessed for Rangeland Health S & Gs. All standards were met for each of the leases, therefore no follow-up management changes for livestock grazing are necessary at this time. The Baker Field Office will continue to monitor these grazing leases as directed by established means.

g. Recreation

The BLM does not own or operate any recreational facilities within the project area. The primary

recreational use is hunting. The steep terrain as well as limited access limits the amount of recreational use the area receives.

h. Threatened, Endangered & Sensitive Plants

Threatened, Endangered, and Sensitive plant species inventories and clearances would be completed prior to initiation of project actions. A minimum of two field seasons of survey and clearance would be required prior to placement of new roads, landings, or ground disturbing activities. Roads, landings, and other ground disturbing operation areas would be reconfigured, moved, or eliminated from project design in order to preclude any impact to federally listed plant species if any are located during surveys. Similarly, zones of disturbance would be reconfigured or moved to minimize impacts to Bureau Sensitive species in order to ensure viability of all local populations and maintenance of sufficient habitat to protect the species over the long term. No actions would be allowed that would contribute to the need to list a sensitive species as threatened or endangered. Further, operators would be required to advise BLM of any new or additional landing sites needed to complete the project, and to receive BLM clearance and authorization for use of those sites.

At the present time, one field season of botanical surveys has been completed. Of the special status species listed below, only the Nez Perce mariposa lily has been found in the vicinity of the proposed project. It occurs in open grassland sites on ridgetops and slopes. Further botanical surveys are planned for the field season of 2001.

Federally listed species considered for potential occurrence in vicinity:

- *Mirabilis macfarlanei* (MacFarlane's four-o'clock)

Federally listed as threatened - possible in open grassland habitats

- *Silene spaldingii* (Spalding's catchfly)

Proposed for federal listing as threatened but has not yet been listed - possible in open grassland habitats

BLM Designated "Sensitive" Species considered for potential occurrence in vicinity:

- *Achnatherum wallowaensis* (Wallowa ricegrass) BS - possible in open grassland habitats
- *Botrychium spp.* (grape-ferns, several species) BS - possible in moist (or riparian) meadows
- *Calochortus macrocarpus* var. *maculosus* (Nez Perce mariposa lily) BS - possible in open grassland habitats and forest margins
- *Cypripedium fasciculatum* (clustered lady's slipper) BS - possible in Douglas fir forest
- *Mimulus hymenophyllus* (membrane-leaved monkeyflower) BS - possible in seasonally moist springs, drainages, and cliff seep habitat
- *Mimulus jungermannioides* (monkeyflower) BS - possible in seasonally moist springs, drainages, and cliff seep habitat
- *Mimulus washingtonensis* (Washington monkeyflower) BS - possible in seasonally moist springs, drainages, and cliff seep habitat

Ecological site types present in the Courtney Creek - Little Courtney Creek parcels are similar to sites described in Plant Associations of the Wallowa-Snake Province (R6-ECOL-TP-255A-86, June 1987), and include those listed below.

- C Idaho fescue - prairie junegrass (FEID-KOCR)(high elevation)
- C Idaho fescue - prairie junegrass (FEID-KOCR) (mounds)
- C Idaho fescue - prairie junegrass (FEID-KOCR) (ridgetops)
- C Common snowberry/Idaho fescue - prairie junegrass (SYAL/FEID-KOCR)
- C Idaho fescue - bluebunch wheatgrass/arrowleaf balsamroot (FEID-AGSP/BASA)
- C Idaho fescue - elk sedge (FEID-CAGE) - side slopes and inter-forested clearings
- C Bluebunch wheatgrass - Sandberg's bluegrass/Cusick's milkvetch (AGSP-POSA3/ASCU4)
- C Western juniper/Idaho fescue - bluebunch wheatgrass (JUOC/FEID-AGSP)
- C Douglas fir/mountain maple - ninebark (PSME/ACGL-PHMA)

C Douglas fir/ninebark (PSME/PHMA)

Grassland and shrub/grassland sites are generally in mid to late seral condition, receiving very little livestock use except at the upper elevation margins. All sites, including the understories of forested sites, have a large microbiotic crust ground cover component, indicating little recent ground disturbance. Recent soil disturbance appears to be mostly related to use by deer and elk.

II - Affected Environment

A. General Setting

The proposed Courtney Creek forest health project is located in the upper portion of the Courtney Creek drainage of the Lower Grande Ronde River subbasin. The BLM lands are located on steep slopes between the flat privately owned agricultural land on top and the drainage of Courtney Creek. Forested areas are located on the north aspects. Bunch grasses and open rocky areas predominate on the south aspects. Courtney Creek and Little Courtney Creek are perennial streams that flow into the Grande Ronde River. These forest lands are part of the commercial forest described on page 35 of the Baker Resource Area ROD.

B. Affected Resources

1. Fish Habitat/Water Quality

Courtney Creek is a tributary to the Lower Grande Ronde River and flows into the river at river mile 46, about a mile upriver from Troy, Oregon. The Creek starts at about 4400 feet elevation and enters the Grande Ronde River at about 1600 feet elevation. Main Courtney Creek flows through approximately 10% State of Oregon land, 40% BLM land, and 50% private land. The upper tributaries of Courtney Creek are in the Wallowa-Whitman National Forest. There are about 3 miles of BLM ownership in main Courtney Creek.

Little Courtney Creek is a tributary to Courtney Creek. It begins at about 4200 feet elevation and enters Courtney Creek at about 2000 feet elevation. The headwaters for Little Courtney originate on private land about 1-mile southwest of Flora, Oregon. There are approximately 1.5 miles of BLM ownership on Little Courtney Creek.

The Courtney Creek drainage supports summer steelhead, rainbow trout, native redband trout and possibly spring/summer Chinook salmon. The Lower Grande Ronde River supports the above-mentioned species plus bull trout and fall Chinook.

a. Threatened, Endangered & Sensitive Fish Species

Snake River Chinook salmon and summer steelhead have both been listed as “threatened” by National Marine Fisheries Service (NMFS). Chinook salmon were listed in 1996 and summer steelhead were listed in 1999. Bull trout were listed as “threatened” by the United States Fish & Wildlife Service (FWS) in 1997. Redband trout are a BLM-listed sensitive species.

Summer Steelhead

Courtney and Little Courtney Creeks are important spawning and rearing habitat for summer steelhead. Summer steelhead spawn and rear throughout the Grande Ronde River basin. Historical distribution occurred in the same streams that present populations occupy, but past runs extended further upstream and higher in the watersheds than at present.

Redd (nest) counts conducted annually on the Grande Ronde River and tributaries since 1964 indicate that summer steelhead returns declined dramatically through the 1970s and early 1980s, despite reductions and eventual elimination of sport harvest. The decline has been related to mortality at Columbia and Snake River dams, habitat degradation, Columbia River harvest impacts, and ocean conditions. Within the basin, factors limiting summer steelhead production are riparian habitat

INSERT VICINITY MAP - PAGE X

INSERT FOREST AREA MAP - PAGE X

degradation, lack of quality rearing habitat, siltation, low flows, elevated water temperatures, and irrigation water withdrawals (WDF 1989).

Spring Chinook Salmon

Historically, Courtney Creek provided spawning habitat for Chinook salmon. According to the Oregon Department of Fish and Wildlife (ODFW), the last record of spawning in Courtney Creek was in the 1960s (ODFW 1997). Although there is no current information on Chinook salmon use in Courtney Creek, ODFW has discovered Chinook smolt rearing in adjacent tributaries. It is presumed that Chinook salmon are rearing in the lower part of main Courtney Creek as well (Brad Smith, ODFW, Personal Comm. November, 2000).

Spring Chinook salmon are indigenous to the Grande Ronde River Basin and historically were distributed throughout the river system. In the past, the Grande Ronde River drainage produced large runs of spring Chinook salmon. The low numbers of fish returning to spawn are attributed to harvest in the Columbia River, passage mortality at Columbia and Snake River dams, and habitat degradation within the Grande Ronde River Basin (Van Cleve and Ting, 1960).

Within the Grande Ronde Basin, riparian and in-stream habitat degradation has most severely impacted spring Chinook production potential. ODFW, the United States Forest Service (USFS) and the Umatilla Tribes identified over-grazing by livestock, mountain pine beetle damage, limited rearing habitat, low stream flows, logging activities, road construction, and unscreened diversion ditches as the major problems affecting salmon production within the basin (Confederated Tribes of the Umatilla, 1984).

Redband Trout

Redband trout is the interior (inland) rainbow trout, which can be differentiated from the coastal rainbow both by meristic character differences and electrophoretically. Redband/rainbow trout have been listed as a sensitive species because their populations have diminished from historical levels. Redband trout once inhabited the entire upper Columbia River system, areas of British Columbia and Northern California (Lusch 1985). Introductions of hatchery rainbow trout and subsequent hybridization have largely eliminated pure redband trout populations in much of their original range (Bacon, et.al. 1980). Now the redband/rainbow is found only in isolated sections of their historical habitat.

b. Habitat Requirements

Desirable salmonid habitat includes an array of environmental conditions that relate to stream substrate and structure, water quality and quantity, and other factors needed for production of food organisms and protection from predation. Salmonid spawning and rearing areas in fresh water streams have specific habitat requirements. Spawning sites are generally 2-4 feet deep with moderate currents and substrates consisting of mostly cobble-sized material. Rearing habitat requires good stream temperature (less than 64 degrees F.), good pool habitat, hiding cover, food, riparian and stream bank vegetation, and minimal sediment.

Steelhead require very specific habitat conditions for completion of spawning. Spawning habitat should include good cover, cool temperatures, large substrate and well-oxygenated gravels, as well as specific depth and water velocity. Cover can be provided by overhanging vegetation, undercut banks, submerged vegetation, submerged objects, e.g., logs and rocks, floating debris, and water depth and turbulence (Giger 1973)

Redband are similar to brook trout in that they require similar food, space, cover, and individual territories that are afforded by the riffles and small pools of headwater streams (Bacon et al. 1980). However, redband/rainbow appear to tolerate higher siltation and select locations with lower water velocities than is typical for most trout. The redband/rainbow trout also appears to be more tolerant of high water temperatures than other salmonids.

The rainbow trout are representative of the habitat requirements of resident fish. Primary factors affecting rainbow trout habitat include water temperature, water quality, timing and quantity of peak

stream flows, and physical stream and riparian habitat characteristics.

Rainbow trout ideally require stream temperatures of 36-68 degrees F for proper spawning and egg development. Although rainbow trout can survive in water between 33 and 70 degrees F, they grow most rapidly in water that is 50-65 degrees F, and are less susceptible to parasites and diseases at these temperatures. Trout may survive a few hours of exposure to high surface temperatures if they then can retreat to cooler, deeper waters.

Good water quality is essential for migration, spawning and rearing. Water should have a high concentration of dissolved oxygen and low turbidity. The oxygen levels recommended for spawning and migrating fish are at least 80 percent saturation, with temporary levels no more than 5 mg/l (Reiser and Bjorn 1979). Rainbow trout spawning occurs after spring runoff, when water flow is still high and stream temperatures are normal (<50 degrees F.). Rainbow trout eggs and young can be destroyed by oxygen depletion associated with scouring and siltation of the redd. The quality and quantity of the habitat sets the limits on the number of fish that can be produced (Reiser and Bjornn 1979).

c. Habitat Conditions in Courtney and Little Courtney Creeks

Courtney Creek is representative of some of the problems identified basin-wide that are affecting steelhead and Chinook salmon production (ICBEMP 2000; ODFW 2000; Wallowa County - Nez Perce Tribe 1999). Land management practices within the Courtney Creek sub-watershed, primarily on private lands, are affecting the quality of the fish habitat. Particularly, roads within the riparian areas, timber harvest and grazing are creating impacts. In 1996-97 there were floods in the entire basin including Courtney Creek. This created down-cutting in the channel, removal of vegetation and loss of substrate. There are now lower flows, subbing of the water in low flows and increased water temperatures due to habitat degradation in Courtney Creek. Loss of stable channels has created sediment downstream and eroding stream channels from higher flows in both streams.

Habitat Elements

In July 1999, ODFW conducted a Hankin and Reeves stream inventory on 8.25 miles of main Courtney Creek and 2.56 miles of Little Courtney Creek. Stream temperatures also were recorded during this survey. Table 1 displays the habitat information obtained from the 1999 Hankin and Reeves inventory, as well as the desired conditions.

Table 1 - Habitat elements measured during 1999 stream surveys for Courtney and Little Courtney Creeks and desired conditions for fish.

Habitat Element	Desired Condition	Courtney Creek	Little Courtney Cr
Width/Depth ratio	<10	15.9	13.3
Pool Frequency	26	5	5*
Shade	80%	55%-72%	45%-58%
Substrate silt & sand	<20%	9%	6%
Stream bank erosion	<20%	All 8 to 55%	All 16 to 63%
Large Woody Debris	> 20/mile	1.5/mile	1.2/mile

*the streambed was 90% dry at the time of the inventory

The average width of Courtney Creek was 3.5 meters and the average depth was 0.22 meters. The width/depth ratio averaged 15.9. The average width of Little Courtney Creek was 3.3 meters and the average depth was 0.08 meters. The width/depth ratio averaged 13.3. A width/depth ratio of less than 10 is desirable for optimum fish habitat.

For Courtney Creek the pool/riffle/glide percentages were 5/27/1 with rapids, cascades and steps representing 56.2% of the area. The gradient ranged from 1.8% in reach one to 4.5% in the upper reach. The pool/riffle/glide percentages for Little Courtney Creek were 5/0/0 with cascades and steps representing 7.9%. However, 91.6% of the channel was dry. The gradient ranged from 5.5 - 7.2. A greater frequency of pools is desirable for optimum fish habitat. Desired conditions would have closer to 26 percent of the creek in pool habitat.

Shade (canopy cover over the stream) was measured for each reach. Shade averaged 55 to 72% on main Courtney Creek and 45 to 58% on Little Courtney Creek.

Substrate silt and sand average 9% for main Courtney Creek and 6% for Little Courtney. For Little Courtney Creek, substrate was silt 1%, sand 5%, gravel 36%, cobble 33%, bedrock 0% and boulder 20%. The desired condition for fish is to have less than 20% substrate silt and sand. Courtney and Little Courtney both appear to be meeting this condition.

All streambanks are actively eroding. Eroding banks range from 8 to 55% on Courtney Creek and 16-63% on Little Courtney Creek. Sediment is entering Courtney Creek from bank erosion and from Mud Creek, one of its headwater tributaries. Sediment is also entering Little Courtney Creek from bank erosion and from its upper headwaters. Seven tributaries flow into Little Courtney Creek, mostly from private land. These tributaries are unstable and are contributing sediment to Little Courtney Creek.

There were 12 key pieces (>10m x 0.6m) of wood for the entire survey of Courtney Creek and only 3 key pieces of wood for the entire survey of Little Courtney Creek. Desired conditions for fish would have greater than 20 key pieces for every stream mile. Currently there are less than 2 per stream mile.

There were a total of 536 hardwoods per 1000 feet, 401 conifers per 1000 feet and there were no conifers greater than 20" dbh per 1000 feet on the banks of main Courtney Creek. Along Little Courtney there were a total of 457 hardwoods per 1000 feet, 335 conifers per 1000 feet and there were 15 conifers greater than 20" dbh per 1000 feet. These larger trees represent the potential future LWD for the two streams.

d. Water Quality

The project area is located within the Lower Grande Ronde subbasin. The proposed project is adjacent to Little Courtney Creek, Courtney Creek, and Mud Creek. Little Courtney Creek is a tributary to Courtney Creek, which is a tributary to the Grande Ronde River. Neither Little Courtney, Courtney Creek, or Mud Creek are currently listed on the Oregon Water Quality Limited Streams - 303(d) List (DEQ, 1998). The Grande Ronde River is water quality limited at the confluence with Courtney Creek based upon habitat modification, sedimentation, and temperature (DEQ, 1998).

The proposed project is located within the Blue Mountain Geographic Unit, as described in the Baker Resource Management Plan Record of Decision (ROD, 1989). The riparian objectives, allocations, and management objectives for this area are as follows: improve riparian habitat on poor to fair condition streams that support anadromous fish; exclude livestock grazing along selected stream segments, bogs and stream overflows where grazing is not compatible with other resource objectives; allow buffer strips along anadromous fishery streams; and continue riparian inventory and monitor riparian habitat condition, emphasizing anadromous fishery streams (ROD, 1989).

The forest land within the proposed project area is located within an area that has been identified as having a high to severe water erosion potential (ROD, Map 2, 1989).

None of the un-paved roads that would be used for this project cross any major streams or tributaries, as they are located along ridgetops or on the upper portion of the slopes. Sedimentation from these roads currently is not a problem.

The Vale District BLM has conducted water quality monitoring on Little Courtney Creek and Courtney Creek, as well as Proper Functioning Condition (PFC) surveys on Courtney Creek. PFC surveys are estimates of the physical stability of the stream system. The survey form has three components -

hydrologic, vegetative, and soils-erosion-deposition. Aquatic habitat conditions, on the other hand, are not addressed. It should be noted that proper functioning condition is not necessarily equivalent to the desired future condition or the potential of the stream.

The PFC survey of Courtney Creek conducted in 2000 showed that the stream segment within the project area was in a properly functioning condition. The survey was conducted using visual data that was obtained during the course of helicopter flights and reinforced by team members walking the channel. The stream appeared stable except for approximately 0.25 miles of streambank along an old roadbed.

Stream temperature and water quality monitoring on Courtney Creek was conducted downstream of the project area near the mouth of Courtney Creek. The results, as well as the desired parameters for fish, are displayed in Table 2.

Table 2 - Courtney Creek Water Quality Information

Parameter	Desired Fish Conditions	1993	1994	1999	2000
Temp-F°-7 day max ave	limit is - 64 deg. F		68.0	69.9	72.1
pH	low = 1-6.5 ideal = 6.5 - 8.0 high = 8.0 - 14	7.7	7.73	7.8/7.5	8.0/7.8
Dissolved Oxygen (ml/l)	low = 2 - 6 fair = 6 - 10 best = 10 - 15	10.6	11.6	6.9/5.41	10.1
Turbidity (NTU)	good = 1-10 fair = 10-50 poor = 50+	0.5	10.0	9.1/4.3	4.39/1.25
Iron (mg/l)	limit is - 0.30 mg/l*			0.09/0.01	
Nitrate (mg/l)	limit is - 10.0 mg/l*		2.2	2.2/2.0	2.6/8.9
Phosphate (mg/l)	limit is - 0.10 mg/l*		0.0	0.58/0.5	0.49/0.62
Sulphate (mg/l)	limit is - 250.0 mg/l*		0.0	0.0/0.0	

*Blank columns indicate that the parameter was not measured during the specified year
In 1999 and 2000 water quality was measured twice during the field season*

Water quality was measured one time on Little Courtney Creek on 6-21-2000. On this date, surface water flow was intermittent, with approximately 90% of the inventoried stream length dry. Water quality data was collected in an area where surface water was flowing, with the following results: temperature was 63 °F, pH was 7.5, phosphates measured 0.70 mg/l, turbidity averaged 3.03 NTU's, and nitrates measured 2.2 mg/l.

The 7-day maximum temperature that was recorded during 1994, 1999, and 2000 on mainstem Courtney Creek all exceeded the State of Oregon Department of Environmental Quality's (DEQ) temperature standard of 64 °F. The temperature site was approximately three miles downstream of the

confluence with Little Courtney Creek. The pH level was within the limits set by DEQ, as was the Dissolved Oxygen (DO) in 1993, 1994, and 2000. The DO limit set by DEQ is 8.0 mg/l at the time it was measured. In 1999, the DO was below the limit, but there were not enough measurements taken for Courtney Creek to be added to the 303(d) list. For the nutrients that were measured, these numbers were compared to the drinking water standards as maximum levels for aquatics have not been set in the Lower Grande Ronde subbasin. For nitrates, the maximum level is 10.0 mg/l, sulfates is 250 mg/l, and phosphates is 0.10 mg/l. Phosphates is the only nutrient that was observed to exceed the drinking water standard.

The readings for turbidity, or presence of suspended sediment, were 4.3 NTU in 1999 and 10 NTU in 1994. A reading of 0 -10 NTU has little to no effect on fish. Suspended and deposited sediment can adversely affect salmonid rearing habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Reiser and Bjornn 1979). Streams with silt loads averaging less than 25 mg/l can be expected to support good freshwater fisheries. State turbidity standards for Oregon are set at no more than a ten percent increase in turbidity over background levels.

Ph levels appear to be within the desired range for fish. Dissolved oxygen (DO) levels were low during the 1999 water quality monitoring. Low DO can adversely affect swimming ability and performance of fish. It can also adversely affect fish embryos and their growth and development, as well as the metabolism of rearing juveniles. Phosphate levels were above levels recommended for drinking water in 1999. What harm could occur to fish at this level is not known. However, fish are more sensitive than humans to phosphate, and excess phosphates could affect the physiology of the fish, potentially affecting growth, spawning and reproductive success.

Stream temperatures were above desired levels for salmonids. Stream temperatures below 64°F are necessary for adequate rearing. Water temperature influences growth rate, swimming ability, availability of DO, ability to capture and use food and the ability to withstand disease.

During site visits for water quality data collection and field review of the project, actively eroding streambanks were noted below the project area and on private lands. Bank erosion was contributing sediment to both Little Courtney and Courtney Creeks and contributing to bank instability.

Alluvial fans were noted during field visits in 2000 at the mouth of Little Courtney Creek and also at the confluence with Shuman Canyon. These alluvial fans may have been partially deposited from the 1996-97 floods. Surveys and photos from 1992 also show alluvial fans along Little Courtney Creek and indicate that the stream was mostly intermittent at this time also. Land management activities such as grazing, timber harvest, road building, agriculture, etc., mostly on privately owned lands, may have contributed to the instability of Little Courtney Creek and the resultant eroding banks, lack of LWD, and subsurface flow. Active bank erosion was also noted during stream surveys conducted by ODFW in 1999 (ODFW, 2000). Along the three stream reaches of Little Courtney Creek that were surveyed within the project area, actively eroding streambanks were estimated at 17% to 63% of the length of the reach. A lack of LWD was also evident from the stream surveys.

Stream surveys conducted by ODFW before 1996-97 floods indicate that stream banks were more stable prior to the floods on Courtney Creek in those years. ODFW surveys conducted in 1994 estimated eroding streambanks comprised less than one percent of the total length of Courtney Creek. In 1999, ODFW surveyed three stream reaches in the project area. These surveys indicated that actively eroding banks comprised 21% to 51% of the stream length. The ODFW surveys also showed that there was very little large wood interacting with Courtney Creek.

From this information, it appears that the 1996-97 floods contributed to an increase in eroding streambanks. The inability of the streambanks to withstand the floods may be attributed to a number of potential causes, such as changes in land use activities resulting in the disturbance of riparian vegetation, land use activities that have changed or altered the upland vegetation, land use practices that changed the streamflow regime, and/or natural events that altered vegetation or streamflow.

2. Forest Health/Old Forests

The existing forest inventory identifies 772 acres of forest land within the project area. Stand examinations of the forest land were completed in the summer of 1998. Several generalities can be made about the stand structure of all the forest stands: 1) all of the stands have a large tree component of 3-12 ponderosa pine and Douglas fir trees greater than 20" dbh per acre; 2) all of the stands have a large number of small diameter Douglas fir trees; and 3) all of the stands are in the Douglas fir/ninebark (PSME/PHMA) plant association. Table 3 is a summary of the stand exam data.

Table 3 - Courtney Creek Stand Exam Summary

	Live Trees Per Acre					Average Basal Area/ac
	2"-6"	8"-12"	14"-20"	20"+	Total	
Little Courtney	74	61	28	7	170	106
Main Courtney	52	46	18	5	121	78

Stand density varies within each of the stands. While the average basal area in the Little Courtney area is 106 ft², densities range from 40ft² to 240². In the Main Courtney area densities range from 20 ft² to 180 ft².

It appears that historically (pre 1880's) the forest stands had a small number of large diameter trees. With fire exclusion beginning in the 1880's a dense understory of Douglas fir trees became established. This dense understory has grown, resulting in severe competition for light, nutrients and water. This inter-tree competition has caused individual tree growth to decrease, making the stands susceptible to bark beetle attack.

In 1996 Don Scott, USFS entomologist, and Craig Schmitt, USFS pathologist examined the project area. Craig Schmitt revisited the area in 1998. They determined that bark beetles are currently active in the stands. They also found localized moderate to severe dwarf mistletoe infestations. They recommended thinning the stands to stocking levels recommended by Cochran et. al (1994) to reduce the susceptibility to bark beetle damage, and removing most of the mistletoe infected trees. Cochran's guidelines recommend thinning from below, i.e., removing the small trees and retaining the large trees. "Normal" or "fully" stocked stands have dominant, co-dominate, intermediate, and suppressed crown classes. Most of the growth in these stands is in the dominant and co-dominant trees. Thinning an even aged stand from below, thereby eliminating all the suppressed and some or all of the intermediate trees, would not substantially decrease growth per acre but should substantially reduce the probability of mortality. (Cochran et. al. 1994). For the Douglas fir/ninebark plant association, Cochran's guidelines recommend maintaining basal area between 66 ft² for a lower management zone and 99 ft² for a upper management zone. To accomplish this, the stands would be thinned down to 66 ft². The stands would then grow until they reached 99 ft², whereupon they again would be thinned to 66 ft².

Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) is a parasitic plant that infects Douglas-fir trees. Infected trees are damaged as they allocate food and water normally used in tree growth to "witches' broom" development and supporting the mistletoe system. Witches' brooms are masses of ball-shaped growths on branches. The result of this infection is a reduction in tree growth. Trees weakened by mistletoe are particularly susceptible to Douglas-fir beetle attack during periods of stress, such as drought. Mistletoe moves relatively slowly through Douglas-fir stands, with the infection being spread from tree to tree by ejection of mistletoe seeds. The range of ejected seeds is less than 50 feet. The continuous Douglas-fir stands and the relative proximity of individual trees in the Courtney Creek area favor the spread and development of heavy levels of mistletoe infection over time.

The presence of dwarf mistletoe can be beneficial for some objectives and detrimental for others. Broomed trees provide habitat for some birds and small mammals, and the plant is a minor supplementary food source for others. Maintenance of healthy stands is desired as the desired future condition, and stands are no longer healthy when dwarf mistletoe levels become excessive and impacts occur. The hazards of stand replacement fire and the role that dwarf mistletoe can play in

predisposing stands to these events also needs to be considered.

Mistletoe infection can be effectively removed from stands with a low level of infection by removing the infected individual trees with a commercial thinning. To meet various resource objectives, there may be a need to retain some infected trees within treatment blocks. The recommended procedure for meeting this objective is to isolate selected infected reserve trees in small discrete groups or clumps. Retained mistletoe-infected trees should be isolated from the remaining stand by removing Douglas-fir trees within a 50' radius of the retained infected trees.

In general, forest stands in the Little Courtney area are in better condition than the stands in the main Courtney Creek area. Stands in the main Courtney area have a considerable number of broken-topped trees and heavily mistletoe-infected trees. The mistletoe-infected trees eventually will be stressed to the point they will be killed by bark beetles. Further, these infected trees continue to infect surrounding healthy trees. Trees within stands in the Little Courtney area do not have the large number of broken-topped trees, and the mistletoe infection levels are isolated to pockets.

Most of the forest land has not been previously harvested. In the 1960's, a road was built and a small amount of timber was harvested along Courtney Creek pursuant to the Courtney Creek timber sale. The road has not been maintained, and currently is usable. A small area in section 32 was harvested many years ago. The remaining forest land has not been harvested because of accessibility restrictions and steep slopes.

The Interior Columbia Basin Supplemental Draft Environmental Impact Statement (DEIS) used the Region 6 Interim Old Growth Definitions (June 1993) for defining stand attributes of old forests. All of the forest stands in the Courtney Creek area are in the Douglas fir/ninebark (PSME/PHMA) plant association. The attributes used to define old-growth stands in the Douglas-fir series are:

<u>Stand Attributes</u>	<u>Minimums</u>
Live trees in the main canopy	
Diameter (DBH)	21 inches
Number of trees	8 per acre
Age of trees	150 years
Variation in diameter	Yes
Dead trees (>12 inches)	
Standing	1 per acre
Down pieces	2 per acre
Decadent Trees (spikes, deformed tops, boles, and root rot)	2 per acre
Number of tree canopies	1
Canopy crown cover * required minimums	30%

All of the stands in the Courtney Creek area have a large tree component of 3-12 large diameter trees per acre. Approximately 353 acres meet the stated requirement of 8 trees per acre with a 21" DBH minimum. The remainder of the stands do not meet minimum large tree diameter attributes. Some of the large diameter trees in the 353 acres that have 8 trees per acres greater than 21" in diameter are less than 150 years old. Approximately 201 acres have the minimum attributes to of "old forests." These stands are multi-storied with a well-developed understory of younger trees and a scattered overstory of larger old trees.

3. Wildfire/Fuels

The terrain and vegetation on the public land tracts within the Courtney Creek watershed are typical of

the northern end of Wallowa County, Oregon. This secondary drainage within the Grande Ronde River watershed is a transition zone with vegetation aspects similar to the Palouse Prairie, Snake River Canyonlands, and Blue Mountain/Wallowa Mountain Providences. This particular watershed has strongly contrasting north and south aspects, both on steep slopes. Canyon walls typically have a 1,200 to 2,000 foot elevation change within a one-half mile horizontal distance. These 50% to 70+% slopes and aspects heavily influence the vegetation types within the canyons.

The primary areas of concern are the north aspects that are dominated by mixed conifer stands with a dense understory of mallow ninebark (*Physocarpus malvaceus*). Tree composition within these stands is older ponderosa pine (*Pinus ponderosa*) trees on more open drier ridges, with mature Douglas-fir (*Pseudotsuga menziesii*) and some western larch (*Larix occidentalis*) on the moister and deeper soils. Many of these sites now have dense mid-level "dog hair" stands of 50 to 75 year old sapling- and pole-sized Douglas-fir. Many of these younger trees are 35-50' tall but have only 4-6" dbh. Scattered western juniper (*Juniperus occidentalis*) is found near ridge tops and on the major benches. The more open side ridges on these aspects, especially those with a northwestern aspect, have Idaho fescue (*Fescue idahoensis*) as the primary component. Pinegrass (*Calamagrostis rubescens*) can be found under denser stands of conifer. These strong northerly aspects historically did not burn as frequently as the southern slopes. Return intervals were often 50 to 200 years between larger fires and were usually stand replacement in nature.

The south aspects are primarily native bluebunch wheatgrass (*Agropyron spicatum*) range sites in relatively good condition. However, small benches and flats within the canyons have converted to annuals due to past livestock concentration. The small side drainages contain riparian vegetation in relatively good condition. Historically these south aspects burned fairly frequently on a 5 to 25 year interval. This maintained the strong bluebunch wheatgrass and associated species dominance on these sites.

The lack of fire the past 100 years due to aggressive fire suppression, livestock grazing, and other factors has contributed to current conditions within the Courtney Creek Watershed. Fuel loadings within the conifer sites average 40 to 60 tons/ac in places. Any fire starts that might occur within these stands during late summer could easily be stand replacement in nature under the right conditions, and would be hard to control until the fire broke out on top of the major ridges and flats to the north and south of the main canyons.

4. Wildlife Habitat

There are currently 772 acres of forested habitat on BLM lands in the project area. Within approximately 1 mile of the project area lay 1716 acres of forested habitat on private lands. All of these forested acres (2488 ac.) represent a wide diversity of stand ages and structures. Many of the forested acres located on private lands have been logged to some degree. Some of these forests have approximately 5 to 10 trees per acre, while others have 10 to 20 trees per acre. BLM lands have higher densities of trees than most of the private lands, with no harvesting occurring on these lands.

The forest lands in the area are composed primarily of Douglas-fir (*Pseudotsuga menziesii*) with larger individual ponderosa pine (*Pinus ponderosa*) scattered throughout. Ninebark (*Physocarpus malvaceus*) is the dominating shrub in the area. This habitat type is classified as Mixed Conifer, as described by Thomas, et. al., 1979. Approximately 123 species of wildlife are known to use mixed conifer forested habitat for the primary purposes of breeding and/or feeding (Thomas, et. al., 1979). These wildlife species include but are not limited to mule deer, elk, bear, bobcat, cougar, bats, neotropical migratory birds, ground squirrels, and accipiter birds.

Much of this forested habitat is used for cover (winter and summer) for big game wildlife, i.e., elk and deer. The area also is used by ruffed and blue grouse. Ruffed grouse are primarily located in the riparian areas near the streams, while the blue grouse inhabit the upland forests. Black bear and mountain lion have been observed in the area with signs of these wildlife species clearly present throughout the site. Pileated woodpeckers have been heard, and signs of foraging activity have been seen in the area. The area is steeply sloped and has numerous big game trails coursing through each of the forest stands. Much of the elk use is occurring near the western side of the project area in the

forests bearing thicker canopy cover. Deer use occurs throughout the area, with less use in areas where the elk are concentrating.

The lands surrounding the forest lands consists primarily of grasses with bluebunch wheatgrass (*Agropyron spicatum*) and Idaho fescue (*Festuca idahoensis*) as the dominating grass species. There is extensive use of these areas by deer and elk for foraging, especially areas within 100 meters of the forested stands because of the proximity to cover. Cover for elk is considered sufficient when the forested stands are 30 acres or larger and canopy cover is 40% or greater. There are only 3 stands in the analysis area that are less than 30 acres in size and that, but for their small size, would be considered suitable cover for elk. Thus, only 36 out of the 2488 forested acres in the project area do not constitute good elk cover. In other words, there are approximately 2452 acres of suitable elk cover in the analysis area, including approximately 1708 acres on private lands and 744 acres on BLM lands. There is a cover:forage ratio of 28:72.

Deer use forested stands that are greater than 5 acres for cover. All forested acres in the area can be considered cover for both mule deer and white-tailed deer. Deer use these forested areas at all times of the year for winter and summer thermal and hiding cover.

The analysis area is within the Sled Springs Big Game Management Unit, which has an elk management objective of 2750 animals. Current population estimates put the number of elk in the Management Unit at approximately 2100 animals (ODFW), the bulk of which usually are found on the west half of the Management Unit north of the town of Wallowa. Numbers of elk that occupy the Little Courtney Creek and Courtney Creek areas are estimated at 50 animals during the winter and less than 150 animals during the summer. Wintering occurs at the Grande Ronde River along the Grande Ronde breaks, near the Shilo Ranch, near Day Ridge, and near the town of Flora. During the summer months the Little Courtney Creek area bears more elk than the Courtney Creek area. However, these elk are not highly concentrated, but rather are spread out in small bands across the landscape. Problems associated with the population of elk being below the Management Objective are attributed to a predation problem in the area. ODFW attributes the loss of calves during the late winter months to predation by mountain lions, which are increasing in number. Predation is believed to be the limiting factor in the area to calf survival and recruitment (pers. comm. ODFW)

Elk use the analysis area primarily for hiding cover during hunting seasons, and very little for winter cover or as summer habitat. The areas used most during the winter are those areas along the open ridges that provide forage and warming locations, e.g., south-facing slopes. It should be noted that the use of the area by elk for any stage of their life cycle is minor. The relatively few number of animals and availability of additional habitat outside of the analysis area is indicated by the low densities of elk in the area and the small herd size.

From field data collected in stand exams, the number of snags available for cavity-dependent wildlife species is approximately 6-10 snags greater than 14" dbh per acre. Down logs in the area are not as numerous, and without stand exam data are estimated at approximately 3-5 logs per acre.

The analysis area is too low in elevation and does not have the necessary components (alpine forests) to be considered habitat for the Canadian Lynx. Also, there have been no wolf sightings in the area to date, presumably because of the proximity of the area to human residences.

Surveys for goshawks for the last 2 seasons have revealed no goshawk occupation of the area. The forested acres are not conducive to goshawk occupancy due to the lack of forest habitat components (large snags and down logs, >20" diameter) and the large expanses of treeless areas between the forest stands. Also, the proliferation of shrubs in the understory would make foraging for prey very difficult for goshawks.

Snags and Wildlife Trees

Current RMP guidelines call for the maintenance of snags sufficient to support 60 to 70 percent of the viable population of cavity-dependent wildlife. At a 60% potential population level, the number of snags required per acre to meet the needs of primary cavity excavators in a mixed conifer vegetation community is 1.35 snags/ac. The RMP also directs the selection of snags and retention trees to be

divided equally between snags 25" dbh and larger, ranging to 50' in height, and snags 10-25" dbh over 6' in height (p. 39). Otherwise, 0.67 snags/ac in the 10-25" dbh range would remain and 0.67 snags/ac in the 25"+ dbh range would remain. Current information suggests that there are sufficient snags/ac existing on the area to allow for the fulfillment of these recommendations. The number of retention trees per acre needed to ensure the recruitment of snags following forest health treatments for mixed conifer forest communities is approximately 26 trees/ac. Therefore, it is suggested that no forest treatment leave less than 26 trees/ac. Information in the Draft ICBEMP indicates that these forest types had a historic range of variability of a median of 3.5 snags/ac, with ranges from 2.5 to 4.6 snags/ac. ICBEMP indicates that current levels of snags are 1.3 snags/ac in these forest types (Lower Snake River RAC, High fire intensity, dry forests). However, studies indicate that requirements for cavity-dependent wildlife species are being considered when developing recommendations for snag requirements and green tree retention in the project area.

III - Proposed Action and Alternatives

A. Alternatives Considered but Not Analyzed in Detail

Several alternatives and design features were discussed during the development of the proposed action, and alternatives were dismissed from further analysis based upon an initial assessment by the interdisciplinary team. The following is a description of some alternatives that were considered and the rationale for eliminating them from detailed analysis.

A commonly used alternative that would reduce amount of ninebark and created fuels following harvest using prescribed fire was considered. Prescribed burning within the thinning units was dropped from consideration because of the high risk of escape due to poor access, the safety risk to personnel conducting such a burn, steep slopes, and mid-slope property lines. The potential for temporarily increased soil erosion within designated threatened fish species habitat also was a concern with broadcast burning following thinning. Thus, although reintroducing fire into the forest ecosystem generally increases the health of that ecosystem, the particular circumstances surrounding the proposed project preclude prescribed broadcast burning.

An alternative that would reduce the amount of ninebark following thinning using chemicals was considered. Chemical treatment was dropped from consideration due to high costs. Also, the use of herbicides in the management of species other than noxious weeds on BLM-managed lands currently is enjoined.

An alternative that would reduce stands to just a few large trees per acre, a condition similar to what historically may have been left after a wildfire, was discussed. This was dropped from consideration due to soil erosion, wildlife cover and public perception concerns.

An alternative that would use cable logging systems rather than helicopters was discussed. This alternative was not analyzed in detail due to resource protection concerns and feasibility problems. Cable logging would require additional road building and would create more ground disturbance during yarding operations than helicopters. Further, the steep broken terrain and mixed ownership would make it difficult to design an efficient cable logging system.

An alternative that would leave tops and limbs (slash) on site was discussed. This alternative was dropped due to wildfire concerns. Leaving large quantities of small fuels on a steep slope would create a wildfire hazard and would become obstacles to elk and deer using the area.

B. Project Design Features common to All Action Alternatives

This section describes project design features that would be implemented in conjunction with the action alternatives to minimize adverse impacts on the environment.

1. Timber Harvesting

Timber felling would be done by hand, and the limbs and tops would remain attached to the logs during yarding operations. Yarding would be done with helicopters to landings sited on privately-owned land on flat areas above the BLM lands. The limbs and tops would be severed from the logs at the

landings. All of the logs, down to a 3" diameter top, would be hauled off of the project area. The limbs and tops would then be piled. In order to accommodate helicopter logging, the landings would be 1-2 acres in size. After the landing piles are burned, the landings would be ripped and seeded with a species mix that the landowner prefers. Areas with potentially unstable slopes would be excluded from the thinning areas. The standard design features for forest management operations listed on pages 37-40 of the Baker ROD would be implemented.

2. Slash Disposal

Most of the slash created by this operation would be removed from the harvest areas and piled on the landings. All logs, down to a 3" diameter top, would be removed from the landings. The remaining limbs and tops would be piled on the landings. This remaining material would be burned on the landings in late fall or early winter after logging is completed. All burning would be done in compliance with State of Oregon smoke management regulations.

3. Streamside Buffers

Riparian Conservation Areas (RCAs) would be used to protect and enhance riparian values. The boundaries would be established using ICBEMP and PACFISH criteria, whichever affords greater protection. The boundaries that would be used in this project are 300' on perennial and fishbearing streams, and 120' on intermittent streams.

4. Snags, Coarse Woody Debris, and Large Trees

Snags, down logs, and large green trees are important for wildlife habitat and maintaining long-term site productivity. To meet RMP objectives for cavity-nesting wildlife species, 30-45 live trees and all existing snags would be retained where possible. During the helicopter yarding operations, a small number of snags may need to be felled for safety reasons. Felled snags would be left in place and become down wood. Following thinning operations, if large snags are deficient in the area, large green trees may be girdled at the base to create additional large snags. Where available, 5-10 down logs greater than 12" in diameter and 20' in length would be retained. Down logs could be removed from areas where these numbers are exceeded. If there are fewer than 5 down logs per acre, additional trees may be felled following timber harvest operations to meet coarse woody debris objectives. Logs would be at least 20' in length with the small end being 12-17" in diameter. Within the thinning areas, all green trees greater than 21" dbh would be retained.

5. Road System Management

Within the project area, the only road located on BLM land is in the main Courtney Creek drainage. This road was used in the 1960's to haul timber, has not been maintained, and currently is impassable. No maintenance or improvements are proposed for this road. All of the roads that would be used to haul logs off of the project area are private, county, or state-owned. The privately-owned roads used to haul logs would be surface bladed when needed. Approximately 1000 feet of new road would need to be built through pastures located on the privately-owned lands on flat areas above the BLM lands.

No roads on BLM managed lands will be used for timber harvesting and/or hauling. Approximately 10.7 miles of County-owned roads will be used for this project. Of these, approximately 1.3 miles are paved, 4.3 miles are surfaced with rock, and 5.1 miles are natural-surfaced roads. There are also approximately 5.5 miles of privately-owned roads that will be used to access the project area and haul timber. Of these, approximately 1.6 miles are surfaced with rock, and 3.9 miles are natural-surfaced roads.

Up to six landings, each 1-2 acres in size, would be constructed on private land on the flats above the project area, which would result in a total disturbance area of no more than 12 acres. No single area of disturbance would exceed 2 acres in size. Further, both the new road and the landings would be ripped and seeded after project completion.

6. Monitoring

During project implementation, project design features would be monitored to assure compliance. Upon project completion, monitoring would be conducted to determine whether objectives were met.

Stream temperature monitoring of Mud Creek and Courtney Creek before, during, and after project implementation would take place. Monitoring of LWD placement in the stream channels would be conducted to ensure that the structures are stable and providing protection to the streambanks and also providing aquatic habitat.

It is anticipated that noxious weeds will become established at the helicopter landings located on private lands. These landings will be monitored for 5-7 years following use. Noxious weeds would be treated in accordance with the Vale District Weed Management program.

7. Cultural Resources

Cultural resource inventories were performed on BLM and private lands in fall 2000 and spring 2001. No cultural resources were identified in the project area of potential effect. Two isolated artifacts and part of a historic homestead debris scatter were located nearby on BLM land. These properties are considered to be ineligible for listing in the National Register of Historic Places. Several historic homesteads dating to the turn of the twentieth century and a hunting blind identified on private lands will be avoided. Survey of the upper reach of main Courtney Creek will be completed during the 2001 field season, prior to implementation of stream restoration projects. Any new or additional landings or roads would require further BLM survey and authorization prior to use.

Any cultural resources identified would be avoided. The project would have No Effect on any historic properties listed or eligible for listing on the National Register.

C. Action Alternatives

1. Implementation of the Action Alternatives

Both proposed action alternatives would cost more to implement than the value of the timber that would be removed, particularly because the current market value of timber is very low. Implementation may take place within the next 5 years, depending on whether additional funding is available as well as possible increases in timber value. Should funding become available for less than full project implementation, the project would be scaled back to reflect the available funding. Should funding become available in different years, the project would be implemented in phases.

2. Alternative 1 – Proposed Action

Alternative 1 proposes commercial thinning designed to improve forest health, and restoration to improve riparian conditions within the project area. Approximately 408 acres outside of the RCA would be commercial-thinned, and 24 acres within the RCA would be treated. Map 3 shows the location of these treatments within the project area, and Table 4 details the number of acres proposed for each treatment.

a. Commercial Thinning

Forest stands outside of the RCAs would be thinned from below, leaving larger healthy trees and removing smaller trees. Where possible, stands would be thinned to retain 70 ft² of basal area, or a minimum of 30 live trees per acre. The trees selected to be harvested would range from 5-20" dbh. No trees greater than 21" dbh would be harvested. All existing snags would be retained where possible. During the helicopter yarding operations, a small number of snags may need to be felled for safety reasons.

Many of the trees in the Main Courtney drainage have broken tops and/or severe mistletoe infection, and there are not enough healthy well-formed trees to retain 70 ft² of basal area. These stands would be thinned to 40 ft²-70 ft², retaining the healthiest, best-formed trees. Trees in the Little Courtney area are in better condition, and there should not be a problem retaining 70 ft² of healthy, well-formed trees.

Dwarf mistletoe-infected Douglas-fir trees are scattered throughout the forest stands. Infection levels range from light to heavy in individual infected trees to small pockets of infected trees. Mistletoe-infected trees below 21" dbh would be removed, while mistletoe-infected trees above 21" dbh would be retained. Where possible, while maintaining the appropriate basal area over the entire stand, retained

mistletoe-infected trees would be isolated from the stand with a 50' area cleared of the same species as the infected tree. In areas with heavy dwarf mistletoe infection levels, ponderosa pine and western larch will be favored wherever possible. As many small diameter Douglas-fir trees as possible within 25' of heavily broomed trees will be removed.

b. Riparian Treatments

Multiple treatments within RCAs are designed to enhance and maintain riparian vegetation, promote future growth of streamside trees and generally bear long-term benefits to these RCAs, all of which goals justify entering the RCAs under PACFISH. The treatments would provide LWD to the stream now, and promote future LWD availability. For example, proposed treatments include felling of trees into the stream to provide LWD in the short term, and commercial and pre-commercial thinning to provide for healthy, large trees within the RCAs which would provide LWD in the future. There are four areas proposed for this sort of treatment within the RCAs in Alternative 1. In areas where LWD input is needed now, two to four trees would be felled into the channel along every 200' of stream length. Thinning operations would be confined to the area between the streambank and 150' upslope, as this is the area where the majority of the large wood input originates from naturally. No trees that are currently contributing to bank stability would be cut for either LWD input or for thinning treatments. Within the RCAs there are patches of trees that may need thinning to reduce competition and promote larger, healthy trees to provide future LWD faster than would be possible with existing conditions. These areas where commercial and pre-commercial thinning is proposed are not continuous throughout the RCAs, and stand exam data has been used to identify specifically where these thinning opportunities exist. Map 3 displays the four different riparian treatment areas.

Riparian Treatment Area A - would consist of felling trees along approximately 0.35 miles of main Courtney Creek. No thinning activities are planned within the RCA.

Riparian Treatment Area B - involves three different stream reaches for a total of approximately 1.6 miles of stream length along Courtney Creek, Little Courtney Creek, and Mud Creek. Treatments in this area would involve felling large diameter trees into the stream to provide for LWD, and a combination of pre-commercial thinning and commercial thinning operations to decrease competition and increase the health of the remaining trees, as well as provide for large trees in the future which would supply LWD to the stream system naturally. The thinning area within the RCAs in Treatment Area B is estimated at approximately 10 acres, with approximately 5 acres of commercial thinning and 5 acres of pre-commercial thinning.

Riparian Treatment C - involves one stream reach of approximately 0.36 miles in length which is a tributary to Little Courtney Creek. Treatments within the RCA would involve approximately four acres of commercial thinning and cutting of trees for LWD input.

Riparian Treatment D - encompasses two stream reaches, one each on Courtney Creek and Little Courtney Creek, which total approximately 0.56 miles of stream length. Activities within this treatment area include pre-commercial thinning of approximately 10 acres within the RCA. Stand exams have shown this treatment area to be mainly small conifers that cannot provide LWD to the stream at the current time. Following on-site field reviews, if it is determined that enough large trees exist to permit the felling of some of these trees into the stream, this area may also receive some LWD input with this project.

All of the Thinning operations within the Riparian Treatments Areas mentioned above would be confined to the north-facing slopes, where the majority of the trees are located. The proposed thinnings within the RCAs would increase the vigor of the remaining trees, thereby ensuring future shade sources for the stream, allowing faster growth than would occur without thinning, and providing large trees for future LWD input into the stream. Areas where commercial thinning activities would take place would have excess trees that are too small for placement into the stream and are not needed as downed logs for wildlife. These trees would be removed by helicopter to reduce fire hazard. Pre-commercial thinning activities within the Riparian Treatment Areas would involve cutting and piling of trees, which then would be burned during the wet season. Total area of commercial thinning within the RCAs is estimated to be nine acres, and another 15 acres of pre-commercial thinning within the

RCA is proposed, for a total of approximately 24 acres of disturbance within a total of about 333 acres of RCA on BLM managed land, or approximately 7 percent of the RCA within the project area.

Biological Opinions (BO) prepared by the FWS (June 2001) and the NMFS (June 2000) set forth guidelines governing the placement of LWD and rocks into streams. All LWD placements undertaken pursuant to the proposed action would follow these guidelines.

A total of 100-200 trees are proposed to be felled into the stream within the four Riparian Treatment Areas along approximately 2.9 miles of stream. Generally, two to four large diameter trees would be felled along every 200' of stream, although Riparian Treatment Area D may not have enough large trees to cut any for LWD input. The majority of these trees would be live trees over 21" dbh, although large snags may be felled into the stream in some areas if they are not needed to meet wildlife objectives. Some trees smaller than 20" dbh may also be used depending on the stream channel and other site conditions, but it is expected that all trees to be felled into the stream channel would be at least 16" dbh. This size restriction serves the purpose of ensuring that the trees are large enough to interact with the stream to decrease streamflow, capture sediments, create pools, and protect eroding streambanks, while still remaining stable and decreasing the hazard of the felled trees being moved by the stream and causing a debris jam.

As mentioned above, cutting of trees within the RCAs for LWD input and thinning activities would be restricted to the area between the streambank and 150' upslope. No trees currently contributing to bank stability would be felled.

Within all of the RCAs in the project area, native grasses and/or sedges would be seeded on bare soil areas near the stream channels which are currently actively eroding and providing a sediment source to the streams.

Table 4 - Alternative 1- Proposed Treatments

Upland Commercial Thinning	408 acres
Riparian Treatments	
Create LWD - Felling trees	2.9 mi (approx. 53 acres)
Thinning	
Pre commercial	15 acres
Commercial	9 acres
Seeding	56 acres

3. Alternative 2 – Maintain Wildlife Cover/No Trees Cut in RCA

Alternative 2 proposes commercial thinning designed to improve forest health while also maintaining big game cover. This Alternative also would include treatments designed to improve riparian conditions within the project area, although no trees would be cut within the RCA. Approximately 56 acres of riparian areas would be seeded with native grasses and/or sedges. Map 4 shows where these treatments would be located within the project area, and Table 5 details the number of acres proposed for each treatment. Commercial thinning areas identified in Alternative 1 were the only forested stands considered for commercial thinning in this Alternative.

INSERT MAP OF ALT 1 - PAGE XX

INSERT MAP OF ALT 2 - PAGE XX

a. Commercial Thinning

There are two commercial thinning prescriptions in this alternative. Both prescriptions would thin from below, which would retain the largest trees and harvest the smallest trees. Stands that currently have satisfactory cover, i.e., greater than 75% canopy cover, would be thinned to retain that 70% canopy cover (or approximately 120 ft² basal area). Approximately 69 acres would be thinned with this prescription. Stands that currently have marginal cover, i.e., between 40% and 70% canopy cover, would be thinned to retain that 40% canopy cover (or approximately 75 ft² basal area). Approximately 276 acres would be thinned with this prescription. None of the stands proposed for treatment have less than 40% canopy cover.

In this alternative, the prescribed cover would be maintained. Mistletoe-infected trees above 21" dbh would be retained wherever possible. Mistletoe-infected trees below 21" dbh would be removed. Where possible, while maintaining the appropriate cover over the entire stand, a 50' diameter buffer would be created between retained mistletoe-infected trees and the remaining individuals of the same species of tree within the stand. In areas with heavy dwarf mistletoe infection levels, the prescription would favor ponderosa pine and western larch wherever possible. Small diameter Douglas-fir trees within 25' of heavily broomed trees would be removed wherever possible.

b. Riparian Treatments

No commercial or pre-commercial thinning activities would take place within the RCAs. No trees would be felled for LWD within the RCAs.

Within all of the RCAs in the project area, native grasses such as blue wild rye, basin wild rye, bluebunch wheatgrass, and/or canary reedgrass would be seeded on bare soil areas near stream channels that currently are actively eroding and providing a sediment source to the streams. In addition to the native grass species mentioned above, a combination of sedge and juncus species also would be seeded within 10-15' of the stream channels. Entering the RCAs is justified under PACFISH inasmuch as the project is designed to avoid risks, to promote future vegetation growth and streambank stability and to generally provide long term benefit to the streams.

Table 5 - Alternative 2- Proposed Treatments

Upland commercial thinning	
maintain satisfactory cover	69 acres
maintain marginal cover	276 acres
Total	345 acres
Riparian treatments	
seeding	56 acres

4. Alternative 3 - No Action

Under this alternative no new management actions would be initiated in the Courtney Creek area. No trees would be cut and no riparian areas would be restored. Current management practices would continue in the area.

IV. Environmental Impacts

A. Effects of Alternative 1 - Proposed Action

1. Fish Habitat/Water Quality

Alternative 1 proposes commercial thinning to improve forest health and restoration to improve riparian conditions within the project area. The proposed alternative includes thinning approximately 408 acres outside the RCA and treating 24 acres within the RCA. Project design features for timber harvesting, RCAs, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The action alternative description sets forth the proposed restoration of large wood by thinning to promote growth of younger trees, LWD placements with the thinned trees and seeding.

The direct effects to fish resulting from the Courtney Creek Forest Health project is rated extremely low. ICBEMP and PACFISH buffers will be used to protect Courtney and Little Courtney Creeks during harvest treatments. There also is very little risk that the project proposals will cause any indirect effects to present populations of listed fish species located in the Lower Grande Ronde. The project, in time, will be beneficial to the watershed.

The Courtney Creek Forest Health project and seeding in the Lower Grande Ronde River Watershed has been through Level 1 conferencing, and the BLM currently awaits and expects FWS and NMFS concurrence with the project. In the event that concurrence is not forthcoming, or that the satisfaction of additional conditions are required prior to the issuance of concurrence, project specifications will be revised in accordance with FWS and/or NMFS directives. This, however, is not expected, inasmuch as the project is classified as MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT bull trout, summer steelhead, and chinook salmon occupying habitat on or adjacent to public lands within the proposed action area. This is due to 1) low risk ratings; 2) protection measures to minimize the risk of any adverse effects; 3) a positive effect for long term watershed health, streambank stability and riparian restoration; and 4) the risk of direct and indirect effects to these fish is extremely low. ICBEMP buffers and protection measures will minimize the risk of effects.

A risk rating system was developed for this analysis area to rate the potential effects of the proposed actions on water quality and stream/riparian areas. The risk rating incorporated information on harvest treatments and methodology, soils, and restoration miles. The risk rating for this alternative was the higher of the two action alternatives. The risk rating calculations are located in the Fisheries staff report in the analysis file.

The hydrologic effects of the proposed action were determined by measuring the basal area remaining in the treated stands. In Alternative 1, 26% of the project area (408 acres) would have a remaining basal area of 59-69 ft² and 74% of the acres would not be treated. The basal area averages 78-110 ft² in the untreated stands, which are hydrologically recovered at 76 ft² basal area for the fir conifer stands.

Threatened, Endangered and Sensitive Fish Species

A determination of the direct and indirect risks to listed fish and their habitat indicators has been completed for both action alternatives. Actual effects of these proposed projects were determined on the listed fish species considering the existing baseline condition and the specific analysis of the effects the projects may have on the life history of the listed fish. Guidance for making this biological determination was provided by *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996) and a *Framework to Assist in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale* (USFWS 1998). These methods were combined to provide a consistent approach for all listed fish species analyzed in this document.

Alternative 1 provides for the most restoration of fish habitat with the highest risk of impacts to fish and fish habitat, as compared to the other action alternative. Even so, there should be no direct or indirect effects to fish as a result of this alternative.

There is very little risk that the Courtney Creek Forest Health project and seeding will cause any direct or indirect effects to present populations of listed fish species located in the Lower Grande Ronde River Watershed. The Courtney Creek Forest Health project and seeding will not have an effect on subpopulation size, growth and survival, life history diversity, persistence and genetic integrity. As such, the project is rated extremely *low*. ICBEMP buffers and other protection measures would be used to protect Courtney and Little Courtney Creek fish habitat during harvest treatments.

In the Pacific Northwest in general, all listed species have been reduced in numbers and are “functioning at risk” due to the loss of essential habitat. Within the total basin there are reductions in size and number. Life history and Isolation are not being maintained by the listed species. Many subpopulations are isolated to only a small number of tributary streams. Persistence and genetic integrity have most likely been lost, since most of the populations are diminished from historical levels.

In summary, Alternative 1 of the Courtney Creek Forest Health project and seeding in the Lower Grande Ronde River Watershed MAY AFFECT, but is NOT LIKELY TO ADVERSELY AFFECT bull trout, summer steelhead, and chinook salmon occupying habitat on or adjacent to public lands within the proposed action area.

The *low* rating cited for both action alternatives is based on a site-specific analysis of the potential direct and indirect effects on spring/summer chinook salmon, fall chinook salmon, summer steelhead and bull trout habitat. Based on the consequence and likelihood of adverse effects from the actions, potential effects are rated low, moderate or high. This analysis uses the best available scientific information and site-specific professional judgement to determine potential effects.

The analysis of potential effects for bull trout was completed using the Diagnostic Pathways and Indicators Matrix and the Dichotomous Key for Making ESA Determination of Effects, and associated instructions contained and explained in the publication, “*A Framework to Assist In Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale*” (USDI FWS, 1998).

The analysis of potential effects for steelhead and chinook salmon was completed using the Matrix of Pathways and Indicators in Making ESA Determination of Effects, as assessed using the National Marine Fisheries Service checklist and matrix of pathways (National Marine Fisheries Service, 1996). Appendix A summarizes effects on habitat indicators for each project in tabular form.

Fish Habitat

In fulfillment of PACFISH directives, fish habitat would improve over time with the restoration of vegetation, thinning to promote growth of younger trees and placement of LWD. The restoration proposed would help promote pool habitat (increase LWD) in accordance with the aforementioned FWS BO, increase shade (thinning to promote larger growth), and help stabilize riparian areas (seeding) and streambank recovery on 2.87 miles of existing fish habitat.

This proposed alternative has the highest risk, relatively, of creating impacts to fish habitat from harvest activities, although the methodology used for harvest in this alternative would create very low impacts due to the use of helicopter. The number of acres treated is, in reality, the major difference between Alternative 1 and Alternative 2. Both alternatives have a low risk of impacting fish habitat due to the use of helicopter yarding, which causes the least impact of all harvest methodologies.

Alternative 1 is the only alternative that actively treats RCAs to promote shade and utilizes LWD placements to rebuild pool habitat and restore riparian areas.

Riparian Areas

Buffers in RCAs would protect existing riparian areas, streams and fish habitat during harvest activities. The project will use ICBEMP recommended buffers, as follows:

- *Rangeland perennial and intermittent streams* - the stream channel and the area on either side of the stream extending from the edges of the active channel to the extent of the flood-prone

width;

- *Forested perennial streams, and intermittent streams that support fish spawning and rearing* - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of two site-potential trees (approximately 300 feet);
- *Forested intermittent streams that do not support fish* - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of one site-potential tree (approximately 150 feet);
- *Ponds, lakes, reservoirs, and wetlands* - the body of water or wetland and the area from the edge of the wetland, pond, or lake to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to distance equal to the height of one site-potential tree, whichever is greatest.

This alternative does include treatment of 24 acres to improve existing stands by promoting growth of trees in the RCA and to restore riparian areas via LWD placements. This alternative also provides for seeding riparian areas in Little Courtney and Courtney Creeks on 56 acres. These treatments would foster the restoration of the stream channels and riparian areas faster than would naturally occur. Seeding and the LWD placements would help capture sediment and promote channel recovery.

Water Quality

This alternative restores stream habitat by placing LWD in the streams, thinning in RCAs and seeding. This would help promote immediate restoration of the channel and possibly help the existing water quality problems. Stream temperatures in time would be reduced as riparian plants start to produce shade. Sediment would be captured as vegetation recovery progresses. LWD and seeding also would promote this process. This alternative would engender more stream restoration.

Direct impacts to stream hydrology would be limited to the felling of trees in the RCAs for LWD. This tree felling may cause some sediment being introduced into Courtney and Little Courtney Creeks. When the trees fall into the stream channel, they may cause some soil displacement on the stream bank, whereupon the soil would enter directly into the channel. This increase in sediment should be minimal due to the fact that the trees are not concentrated in one area but spread out across 2.9 miles of stream, and the fact that not all trees would input sediment into the streams.

Direct beneficial impacts caused by the introduction of LWD into the stream channels may include decreased streamflow velocity, trapping of gravels and sediments which can improve aquatic habitat, and creation of pools. Decreased streamflow velocities can help decrease bank erosion and channel downcutting. Placement of LWD also can directly protect eroding banks by placing the LWD at such an angle as to deflect the water away from the bank and back towards the thalweg of the channel.

Indirect and Cumulative impacts to the hydrology resource could include changes in peak and base flows, changes in stream shade and temperature, changes in snow accumulation, and increases in sediment.

Harvesting of trees can increase openings in the forest canopy which, in turn, can lead to greater accumulations of snow in these openings than would occur in an undisturbed forest. Warm rain-on-snow events can melt this increased snowpack quickly and result in higher than normal flows. Since this is a thinning, not all trees would be harvested and any openings created in the forest canopy would be small. Any increase in snowpack due to these openings would not be expected to be large. The trees left on site are expected to respond to the thinning with increased growth due to the reduction in competition. This growth from the largest trees left on site as well as the trees smaller than 4" dbh would decrease the likelihood of increased snowpack, particularly over time. Indeed, remaining trees would experience increased growth and vigor and would fill most of the openings left by the thinning within approximately ten years, so that any difference in snow accumulation before and after thinning would not be measurable.

Increases in base flows due to removal of vegetation are expected to be minimal and short-lived. An increase in base flow can be expected after harvesting of trees in forested areas because the trees that are harvested are no longer using water from the site. However, during thinnings, not all trees are removed, and the remaining trees may use more water than they had previously. Further, an increase in brush in this area and consequent increased water use can be expected. Thus, for these reasons, any increase in base flows due to the thinning activities would be expected to last for only two to three years before the remaining vegetation and any newly established vegetation on site would compensate for this increase.

Timber harvest also can raise the amount of sediment within the streams due to increased exposure of bare ground. Nonetheless, even though the proposed project is within an area of high to severe water erosion potential, any increase in sediment due to timber harvesting is expected to be negligible due to the fact that all of the yarding would be done with a helicopter. Yarding with a helicopter would ensure that trees are not yarded across the ground, thereby protecting remaining vegetation and soil from disturbance and reducing the likelihood of creating bare soil areas where erosion could be a problem.

The use of un-paved roads for timber hauling can increase sediment by removing cover vegetation and exposing loose soil to ditchline and surface run-off. No perennial streams are crossed by the un-paved roads that would be used for this project. The roads are located on ridgetops, flats, and/or on the upper portion of the slopes. Since there are natural-surfaced roads in the project area, timber hauling would be restricted to the dry season or during the winter when the road surface is frozen. Seasonal restrictions on transporting timber by log trucks, the ridgetop location of the roads, the fact that said roads would not cross any perennial streams, and the fact that no major road renovation is planned, any increase in sediment due to timber hauling would be negligible.

The proposed project envisions that one new temporary road approximately 1000 feet in length would be built on private land, as are six landings that may result in a total surface disturbance of up to 13 acres. The proposed site of the new road and landings are along ridgetop/flat areas that do not cross any streams, draws, or springs. The landing areas and new road would be ripped and seeded after project completion. Due to the location of the landings and new road, and the facts that a) there is no direct conduit for surface erosion to reach any stream channel; b) the landing areas are surrounded by vegetated ground that will capture any surface runoff; and c) these areas will be ripped to reduce compaction and then seeded after project completion, no significant increase in sediment would occur from these activities.

The thinning of trees in the RCAs and the felling of trees to create LWD initially could decrease shade and increase stream temperatures. Approximately seven acres along Courtney Creek are proposed for pre-commercial thinning (PCT) and another two acres for commercial thinning (CT). The same acreage of PCT and CT is planned along Little Courtney Creek. Along a tributary to Little Courtney, approximately four acres of CT is proposed. Adjacent to Mud Creek, a tributary to Courtney Creek, approximately one acre each of PCT and CT is planned. Pursuant to the PCT prescription, trees that are cut would be hand-piled and burned on site. Under the CT scenario, trees that are cut would be used for placement in the stream if they are large enough or left on site for LWD requirements of terrestrial organisms. Only if the number of trees cut in a CT area exceeded what reasonably could be left on site because of fire concerns and the cut trees were not of sufficient size to be used in the stream would any of these trees cut in the RCAs be removed. In both the CT and PCT areas, each treated area would be less than one acre. The objective is to treat small pockets of trees that are overstocked, suppressed, or diseased, and to encourage growth of larger, healthier trees in the RCAs so as to ensure future availability of LWD and to provide a good source of shade over time.

In the RCAs, a total of 24 acres of thinning is proposed, or approximately 7% of the 333 acres within the RCAs in the project area. In addition to the thinning, between 100 and 200 trees would be placed as LWD within 2.9 miles of stream in the project area. Some of these trees would come from the thinning areas in the RCAs, while others would be individually selected along the stream channels. See the description of the riparian treatments in Section II, Alternative 1, and the accompanying map.

The thinning of trees in the RCAs would increase tree size and vigor in the area most likely to

contribute future LWD to the streams. The felling of trees into the stream for LWD would provide a temporary input of wood into the stream, which would help create pools, trap sediments, and decrease streamflow velocity during high flows. Any tree that currently is contributing to streambank stability would not be cut for LWD input or pursuant to the thinning operation.

Thinning in the RCAs at the present time ensures greater growth and tree size in a shorter time period than would occur naturally. Restricting thinning in the RCAs while thinning in the uplands would create a situation in which the largest, healthiest trees are furthest from the stream channel, with little or no chance of interacting with the stream. Thinning in a portion of the RCAs would help ensure that there are large trees available in the future to provide LWD to the streams.

Thinning of trees and creating LWD in Little Courtney should not have an effect on stream temperatures due to the fact that the stream is intermittent in nature and would not provide surface flow to perennial stream reaches during the critical summer period when elevated stream temperatures are of concern. Main Courtney Creek and Mud Creek are perennial streams so there is the possibility of affecting stream temperatures with tree removal. Eight acres of PCT and three acres of CT are proposed in the approximately 131 total acres of RCAs adjacent to these two streams. Because the largest, healthiest trees with the best and largest shade-providing crowns would be retained, and the thinning and tree felling for LWD would be spread out across approximately 1.4 miles of stream, no measurable impacts to stream temperatures are anticipated. Further, the thinning and felling would occur mostly on northerly slopes, so removal of some trees would not result in as great an increase in insolation as if the trees were removed from westerly or southerly slopes.

Moreover, because the thinning and tree felling along the two perennial streams in the project area would not be concentrated in one area and would not create large openings in the canopy, less than 10% of the RCAs would have activity in them, and the location and orientation of the treatments would minimize any increase in direct solar radiation, any decrease in shade or increase in stream temperatures should be negligible.

Seeding in the RCAs would help establish native grasses, sedges, and juncus spp. that are currently absent from the area or are only minor components. Establishment of this vegetation along the streambanks and on the floodplains would help stabilize banks that currently are eroding, help capture sediment during high flows that would contribute soil and nutrients to the floodplain, and reduce some of the adverse impacts that can happen during flood events.

2. Forest Health/Old Forest

Commercial thinning treatments would take place in 408 (52%) of the 772 forest acres within the project area, as described in the proposed action. Of the remaining 364 (47%) acres of forest land, 24 acres would be commercial or pre-commercial thinned within the RCA, and 340 acres would not be treated.

a. Forest Insects

Implementation of the proposed action would reduce tree stocking to recommended levels on 52% of the forested stands within the project area. Thinning the forest stands would increase the growth rate on the remaining trees, resulting in healthier trees that are better able to resist bark beetle attack. Overall stand resistance to bark beetle attack would remain high over the next 20-40 years. The stands would continue to grow until they again become overcrowded, at which time they would be thinned.

Tree densities in areas not thinned would remain high, and densities would slowly increase over time as the stands grow. Growth of individual trees within these stands would continue to be slow, and the trees would remain susceptible to bark beetle attack. As more trees are killed by bark beetles, fuel loadings in these stands would increase.

b. Forest Disease

The main forest disease concern within the project area is dwarf mistletoe. Dwarf mistletoe-infected Douglas-fir trees are scattered throughout the forest stands, with infection levels ranging from light to heavy in individual infected trees to small pockets of infected trees. Dwarf mistletoe is spread in

stands as spores are shot from fruiting bodies. Removing infected trees is the most effective method for controlling the spread of dwarf mistletoe and, in the proposed action, mistletoe-infected trees under 21" dbh indeed would be removed from the stands. Wherever possible, retained large diameter dwarf mistletoe-infected trees would be isolated from the remainder of the stand by removing trees of the same species within 50 feet of the retained infected trees.

The proposed treatment of mistletoe-infected trees would remove or isolate dwarf mistletoe from the commercial thinning areas. This would effectively stop the spread of mistletoe in the treated stands. In the areas not treated, dwarf mistletoe would remain in the stand, slowly spread to uninfected trees, and continue to slow tree growth. Infected trees subsequently would become more susceptible to bark beetle attack.

c. Old Forest

The proposed commercial thinning would not impact old forest attributes because no trees greater than 21" dbh would be removed.

Within Riparian Treatment Area B, thinning would occur in 1.6 miles of streamside forest, approximately 1.25 miles of which are classified as old forest. These old forest areas range from 26 acres - 135 acres in size and have 11-13.5 trees greater than 21" dbh. In this treatment area, trees greater than 21" dbh would be cut to provide LWD in streams. The maximum potential impact of this treatment would be to fell four large trees along every 200 feet of stream length into the channel. This would remove a small portion of the large old trees from the stands, reducing the number of large trees in these old forest stands by 0.6-1.0 trees per acre. Nonetheless, after the treatments are completed, these old forest stands would have more than 8 trees per acre greater than 21" dbh, and thus the old forest classification of the stands, as found herein on page 17, would not be impacted.

Riparian Treatments Areas A, C, and D do not include areas that are classified as old forests.

3. Wildfire/Fuels

Thinned Areas

If fully implemented, approximately 408 acres (52%) of the forested acres within the project area would be sufficiently thinned to significantly reduce the potential on-site effects of a stand replacement wild fire. The significance of the risk reduction is based upon a comparison with other options, i.e., not treating the stands of Douglas-fir (No Action), or if slash was left on site after thinning. The required "whole tree" helicopter method of logging would remove the complete tree (minus the roots and stump), i.e., the tops, branches, limbs, and needles normally left on site as slash with other logging methods. Fuel loads after thinning would be reduced significantly by this method on treated sites. However, due to the inherent characteristics of Douglas-fir/ninebark forest communities, especially on steep slopes, treated areas could still experience a stand replacement fire at some point in the future.

The ninebark component of these treated sites likely would increase in density and cover for several years after logging, and would serve as the major carrier of fire through the remaining Douglas-fir trees on treated sites. Under typical peak summer fire conditions, a fire start in one of the area's canyons could still result in mortality of most if not all of the remaining standing trees even after treatment, due to the steep slopes and the increase in ninebark. Conversely, an early or late season fire caused by a lightning strike or other fire start within a treated unit, assuming a quick suppression response, would be easier to control, thereby limiting the fire to a few acres.

Site recovery after a wild fire would be expected to occur relatively quickly on the treated sites, compared to the same units without a thinning treatment. Heat intensity would be less detrimental to soils and soil microbes, and the present shrub, forb, and grass species should recover rapidly. Successional changes on the treated sites would be expected to more closely resemble the normal process and sequence for this particular vegetation association after a wildfire.

Unthinned Areas

On the 39 untreated forested acres, or 5% of all forested acres within the project area and outside the RCAs, a wildfire essentially would have the same effect as the no action alternative. Most of these

remaining acres typically have more open canopies than those sites proposed for thinning, and fuel loadings generally are less. Thus, a wildfire would have fewer effects to soils and vegetation, although potential stand removal of Douglas-fir could occur under certain fire conditions. Some of these sites are identified as cover for elk and deer, and may have as dense a stand of Douglas-fir as the units proposed for thinning. A stand replacement fire on these sites would shift wildlife use to other unburned areas within the watershed for several years until recovery allowed for sufficient reestablishment of adequate cover. This process might take 15-40 years depending on the site and fire intensity. Comparable wildlife cover to pre-fire conditions could take 80-120 years.

Because the treated and untreated acres are interspersed within the project area, untreated sites potentially would benefit indirectly from the treatment of other sites. After completion of the proposed project, the intensity of any large wildfire within the area generally would be lower, thereby allowing for quicker recovery time of these untreated sites as well as the treated sites, particularly as compared to the no action alternative. While some fire rehabilitation nonetheless would be necessary depending upon the fire intensity and its effects, one would expect rehabilitation measures under these circumstances to be less rigorous.

Riparian Conservation Areas (RCAs)

Approximately 333 acres (43%) of the forested area is within RCAs. As only a small total acreage (24 acres) within the RCA would be thinned under Alternative 1, the potential for a stand replacement fire in portions of the RCA would remain high. Such a fire could have long term effects on the particular stream involved. These could include increased water temperature due to lack of vegetation for shading, increased sedimentation from runoff, increased nutrient loading, and possible removal of a close source of future LWD material. These potential effects would depend on how large and how close the fire was to the stream. Those reaches close to the stream with hearty deciduous riparian vegetation and good structure generally would survive and recover quickly.

South Aspects

Almost all proposed actions in Alternative 1 would take place in forested stands on steep, strong northerly aspects. Wildfire and fuel management actions or effects on the north aspects would normally have minimal effects on the steep south aspects with vegetation that is dominated by open, native bunchgrasses. A wildfire burning only on a south aspect or a large fire that would involve both sides of a drainage would effect the south slopes in pretty much the same way regardless of the thinning or other treatments that might have occurred across the canyon. These native bunchgrass ranges in good condition generally recover quickly after a fire; as long as the frequency of fire is low (greater than 10 years). However, in the instance of an intense wildfire burning under extreme conditions on a north aspect, especially under the no action alternative, the fire could possibly preheat the opposite slope sooner, depending on general wind direction and other factors. This could result in the south aspect catching fire from embers, etc. and burning sooner or more intensely with more acres burned than if the north aspects had been thinned previously as proposed under Alternative 1.

Off-Site Effects

Off-Site Fire/Fuel effects from Alternative 1 would occur on the six landings that would be located on private land on the ridges and benches above the project sites. The tops and branches to be piled at the landings after logs are trimmed could amount to several tons of slash and debris at each landing. If hog fuel prices recover from their current low by the time thinning treatments occur, much of this material could be removed from the landings and utilized as hog fuel over the proposed 5-year implementation period. If not, then severe sterilization of the soil under the larger piles could occur once the piles are burned. These pile locations would need to be scarified and re-seeded to grass as discussed under Project Design Features. These sites also would need to be monitored for several years to ensure adequate grass establishment and to check for and treat noxious weed invasion. These slash pile locations could take several years to recover, depending on the intensity of the heat generated by the burning of the larger piles.

4. Wildlife Habitat

Approximately 408 acres of the Douglas-fir/ninebark vegetation type would be modified in this

alternative. This is approximately 52% of the forested habitat on BLM lands and 16% of the total forested habitat in the Courtney Creek area. The direct effects to wildlife in the area would stem from the modification of closed-canopy forest stands to open-canopy forest stands, which would affect the wildlife species composition of the forested areas. In particular, neotropical migratory birds would be impacted; bird species that prefer more open forested stands would replace birds that prefer closed, darker stands.

The direct effect to deer and elk in the area would be the conversion of existing thermal cover to non-cover habitat. Currently, approximately 772 acres of thermal cover exist on BLM lands in the Courtney Creek area. The proposed alternative would reduce the amount of effective thermal cover on BLM lands by 58% to 332 acres. The total amount of cover in the Courtney Creek area, including private land, is approximately 2451 acres. This alternative would reduce the amount of cover in the area on private and BLM lands by approximately 18% to 1998 acres. This would be a minor reduction in the amount of cover in an area that is used minimally by elk during the year. The disturbance in the area by logging activities would displace deer and elk and potentially cause them to seek cover and habitat in other portions of the Courtney Creek area. However, this would be a short term effect, and elk and deer would begin to use the area again within 5 years of the completion of the harvest activities. Future use would be as foraging habitat and hiding cover instead of thermal cover habitat.

Other wildlife species would be effected minimally by the operations and by habitat modification created in the Courtney Creek area by this alternative. Disturbance would be short term, and most of the wildlife species that exist in the area are generalists in habitat use, and are not dependent on the specific habitat types in the area. Any impact to these species would be minor.

Indirect effects to wildlife associated with this alternative would include the decline in use by neotropical migratory birds associated with closed canopy forested habitats and the increase in bird species associated with open canopy forested habitats.

The increase in sunlight to the forest floor from opening the canopy would cause an increase in growth of understory species, mainly mallow ninebark and grasses. An increase in grasses and forbs on the forest floor would increase the amount of forage available to deer and elk in the short term. An increase in the growth of ninebark would increase the potential for the area as hiding cover for elk and deer. The forest floor then would closed off, and forage availability for deer and elk would decline. Because the major foraging habitat for deer and elk in the area is on the south facing slopes and the rim tops where bunch grasses and forbs are predominant, and not generally in areas proposed for treatment, this would be a minor change in foraging habitat.

As it is proposed to leave some green trees for the potential creation of snags, an increase in larger diameter snags would occur in the area. Also, the proposal to leave all existing snags where possible would potentially increase the number and diversity of cavity-dependent wildlife species.

Surveys were conducted for accipiters in the forested stands of Courtney Creek for 2 years and no responses from northern goshawks or other accipiters were detected. Goshawk foraging habitat would be created by opening the canopy of the existing stands and leaving downed woody material for prey species. The remaining closed canopy stands would potentially provide nesting habitat.

Special Status Species Wildlife

There are no Special Status Wildlife species known to occur in the Courtney Creek area. This alternative would have insignificant impacts on any such species.

Riparian Restoration

Insignificant impacts to wildlife would occur due to the proposed riparian restoration projects. Wildlife in the area would experience minor disturbance during the project operations, although this disturbance would be localized to the project area and of short duration. Because trees with nests or cavities would not be used for instream structure placement, there would be no particular impacts to cavity-nesting wildlife species. Neotropical migratory birds are highly dependent on riparian areas for many of their

life history needs. However, because of the relatively unobtrusive nature of the riparian treatments envisioned by this alternative, there would be no change in use of the riparian areas by these neotropical migratory birds. Further, the riparian treatments would create diversity within the project area, as birds species not now using the areas would begin to do so.

5. Cumulative Effects

This proposed alternative would best promote forest health in the Courtney Creek area. It also would restore the greatest number of miles of stream habitat and would help restore downstream habitat, currently in poor condition, on private land. However, the proposed harvest activity has the higher likelihood of the two action alternatives to cause additional water quality problems, primarily due to the number of acres proposed for treatment. There are some areas that would not be restored to their potential for many years. Some of the streams will continue to erode until LWD placements have occurred and seeding is well established. On the other hand, this alternative best addresses water quality problems by improving existing channels and helping to prevent additional downstream impacts to the river. Moreover, all adverse impacts related to the proposed management activities would be strictly temporal in nature, and the ultimate effects of the activities over time would be beneficial in nature.

B. Effects of Alternative 2 - Maintain Wildlife Cover/ No Trees Cut in RCA

1. Fish Habitat/Water Quality

Alternative 2 proposes commercial thinning designed to improve forest health, while also maintaining big game cover. No trees would be thinned and no LWD would be placed within the RCAs, although the proposed activities include thinning approximately 346 acres outside of the RCAs. Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCAs), and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The Alternative 2 description sets forth the proposed restoration of riparian areas by seeding.

A risk rating system was developed for this analysis area to measure the potential effects of the proposed actions on water quality and stream/riparian areas. The risk rating incorporated information on harvest treatments and methodology, soils, and restoration miles. Pursuant to this rating system, it was determined that the risk for Alternative 2 was the lower of the two action alternatives. The risk rating calculations are located in the Fisheries staff report in the analysis file.

The hydrologic effects of the proposed action were assessed by determining the basal area remaining in the treated stands. In Alternative 2, 22% of the project area (345 acres) would have a remaining basal area of 69-92 ft², and 78% of the acres would not be treated. The basal area averages 78-110 ft² in the untreated stands, which are hydrologically recovered at 76 ft² basal area for the fir conifer stands.

Issues

Threatened, Endangered and Sensitive Fish Species

There should be no direct or indirect effects to fish as a result of this alternative. Because this alternative does not provide for any proactive restoration of fish habitat, it creates the lowest risk to fish and fish habitat as compared to Alternative 1.

There is very little risk that the Courtney Creek Forest Health project and seeding will cause any direct or indirect effects to present populations of listed fish species located in the Lower Grande Ronde River Watershed. The project and seeding will not have an effect on subpopulation size, growth and survival, life history diversity, persistence and genetic integrity.

All listed species have been reduced in numbers and are "functioning at risk" due to the loss of essential habitat. Within the total basin there are reductions in size and number. Life history and Isolation are not being maintained by the listed species. Many subpopulations are isolated to only a small number of tributary streams. Persistence and genetic integrity have most likely been lost, since

most of the populations are diminished from historical levels.

The project is rated extremely *low*. ICBEMP buffers and other protection measures will be used to protect Courtney and Little Courtney Creek fish habitat during harvest treatments.

Alternative 2 of the Courtney Creek Forest Health project and seeding in the Lower Grande Ronde River Watershed MAY AFFECT, but is NOT LIKELY TO ADVERSELY AFFECT bull trout, summer steelhead, chinook salmon occupying habitat on or adjacent to public lands within the proposed action area.

Fish Habitat

Fish habitat would improve slowly as restoration activities are implemented. Actions and mitigations for this alternative include riparian seeding, which would occur on 56 riparian acres. This proposed restoration would help stabilize riparian areas and would foster streambank recovery on 7.5 miles of existing fish habitat. Alternative 2 proposes no treatments of thinning or LWD placements in RCAs.

Although both action alternatives bear only low risk of creating impacts on fish habitat from harvest activities, the risk associated with Alternative 2 is the lower of the two. First, the use of a helicopter for yarding operations rather than more traditional land-based methodologies would minimize impacts to fish habitat. Second, Alternative 2 envisions treatment of fewer acres than does Alternative 1, thereby limiting the scope of any impacts. On the other hand, Alternative 2 proposes the lesser number of miles of riparian restoration, which may delay such restoration and stabilization of existing fish habitat, as compared to action Alternative 1.

Riparian Areas

Buffers in RCAs would protect existing riparian areas, streams and fish habitat during harvest activities. This alternative provides for seeding riparian areas in Little Courtney and main Courtney Creeks on 56 acres, which would promote healing of the stream channels and riparian areas faster than would naturally occur. Seeding would help capture sediment and promote channel recovery.

Water Quality

Alternative 2 entails restoring stream habitat by seeding. This would promote immediate restoration of the channel and possibly help the existing water quality problems. Seeding also would promote the capture of sediment over time as vegetative recovery occurs.

Since no thinning would take place in the RCAs and no LWD would be placed in the stream channels, there would be no direct effects to the hydrology resource associated with this alternative.

The indirect and cumulative impacts associated with timber harvest, such as increased peak and base flows, changes in timing of flows, increases in sediment, and increased snow accumulation in openings that were discussed under the preferred alternative could also take place with this alternative. Since this alternative treats less acreage than the preferred alternative, however, impacts to flow, sediment, and snow accumulation would be slightly less than those discussed for the preferred alternative. On the other hand, since these impacts would be minimal in the preferred alternative as well, any measurable difference in these impacts between the two action alternatives would not be expected.

The impacts due to the construction, maintenance and use of roads and landings would be the same as those discussed under the proposed action.

There would be no indirect or cumulative effects on stream temperature or shading under this alternative since there would be no activity occurring in the RCAs other than seeding. The beneficial impacts of the seeding discussed in the preferred alternative would be the same with this alternative.

2. Forest Health/Old Forest

Commercial Thinning would take place on 345 (43%) of the 801 acres within the project area. Of the 345 acres, 69 acres would retain satisfactory cover, or 120 ft² basal area, and 276 acres would retain

marginal cover or 75 ft² basal area. No thinning would be conducted on the remaining 427 acres (57%) within the project area.

a. Forest Insects

In order to maintain marginal cover on 276 acres, thinning operations would retain 75 ft² basal area. This level of basal area is within the recommended range of 66-99 ft², which is aimed at making stands less susceptible to bark beetle attack. In order to maintain satisfactory cover on 69 acres, approximately 120 ft² basal area would need to be retained. This is greater than the upper management zone of 99 ft² basal area and, hence, this treatment would not reduce the stands' susceptibility to bark beetle attack. Because, under Alternative 2, the stands would be thinned to a high basal area, the upper management zone of 99 ft² would be reached sooner, and, consequently, future thinning would be required sooner than in Alternative 1.

Tree densities in areas not commercially thinned would remain high, and densities would slowly increase over time as the stands grow. Growth of individual trees within these stands would continue to be slow, and the trees would remain susceptible to bark beetle attack. As more trees are killed by bark beetles, fuel loadings would increase.

b. Forest Disease

In this alternative, removing dwarf mistletoe-infected trees is a goal secondary to maintaining desired canopy cover levels. Where possible, mistletoe-infected trees smaller than 21" dbh would be removed from the stands. In the satisfactory cover treatments very few trees would be removed, so there would be little impact on dwarf mistletoe infection levels. In the marginal cover treatments more trees would be removed and more dwarf mistletoe would be removed from the stands. In the main Courtney area, where mistletoe infection levels are high, heavily infected trees would need to be retained to maintain the desired canopy cover. In this area and in other areas remaining unthinned, dwarf mistletoe would slowly spread to uninfected trees, continue to slow tree growth and to make infected trees more susceptible to bark beetle attack.

c. Old Forest

The proposed commercial thinning would not impact old forest attributes because no trees greater than 21" dbh would be removed. No large trees would be felled pursuant to riparian treatments, so the old forest would not be effected.

3. Wildfire/Fuels

Generally, the potential effects discussed under Alternative 1 also describe potential effects of proposed actions under Alternative 2 with the following differences:

Thinned Units

Only 345 acres, or 43%, of the forested land within the project area would be thinned vs. the 51% proposed under Alternative 1. This would reduce the acreage treated by about 15%. The discussion under Alternative 1 of the possible on-site benefits to the treated acres subjected later to a possible stand replacement fire still pertain. This reduction in thinned acres however, could contribute to a more intense larger fire that could have more direct effects to certain thinned sites adjacent to the un-thinned units that would have been thinned under Alternative 1.

Unthinned Units

With additional acres of untreated Douglas-fir within the project area under Alternative 2 as compared to Alternative 1, mistletoe infection would continue to spread and additional trees thence would remain susceptible to bark beetle damage. These factors, in concert, eventually would cause an increase in tree mortality and, consequently, in fuel loadings, thereby resulting in a greater risk of a stand replacement fire at some point.

RCAs

Under Alternative 2, no thinning would occur in the RCAs and, therefore, effects of a wildfire in the

RCA could be somewhat more intense due to additional fuel loads. On the other hand, only 24 acres are proposed for thinning under Alternative 1, and so fuel loads would be only somewhat lower than under Alternative 2. Both alternatives raise fuel load issues that, in the future, may allow for fires in un-thinned areas, the intensity of which may result in slower recovery times and potential long-term risks to the stream.

Off-Site Effects

Because this alternative designates fewer acres to be thinned, the volume of tree tops and branches hauled to and left at the landings would be reduced. This possibly would reduce the number of landings needed and the size of slash and debris piles at certain landings. Burning these piles would have a lesser effect on soils, assuming the tonnage burned would be less.

South Aspects

Because of reduced thinning, a wildfire burning across the canyon could burn more intensely under Alternative 2, presenting a greater threat to the south aspect side of the drainage.

4. Wildlife Habitat

Approximately 389 acres of the Douglas-fir/ninebark vegetation type would be modified under Alternative 2. This is approximately 48% of the forested habitat on BLM lands and 16% of the total forested habitat in the Courtney Creek area. Direct effects to wildlife from this alternative would be the modification of closed canopy forest stands to moderately open canopy forest stands. The modification would be minimal as compared to Alternative 1, and canopy cover would not be less than 40% for any of the treated stands. In the forested stands that are designated to have the canopy reduced to 40%, the structure of the forest stands would change in such a way that neotropical migratory birds that prefer open forested habitat likely would begin to use these areas. Current forest conditions are favorable for birds species that prefer more closed forested habitat. Forest stands that have the canopy reduced to 70% would show minimal changes in forest bird species composition because the reduction in canopy cover would be minimal.

Direct impacts to deer and elk in the area would primarily be from the harvest operations. Elk and deer would largely avoid the area during logging operations, but would continue use of the area after the completion of logging. There would be no direct impacts to thermal cover for elk and deer, because those stands that currently provide satisfactory cover (at least 70%) would not be thinned to below that level. Further, those forest stands that currently provide marginal thermal cover (at least 40%) would not be thinned to below that level.

This alternative is designed to promote healthy forest stands while maintaining thermal cover for big game wildlife species in the area. Indirect effects from this alternative would be potential stimulation of grasses and forbs on the forest floor in the marginal treatment forest stands. This would increase the amount of forage available to elk and deer in the area for a short term until the ninebark over-shadowed the forest floor enough to inhibit the growth of these grasses and forbs. As mentioned pursuant to Alternative 1, because the major foraging habitat for deer and elk in the area is found on south-facing slopes and the rim tops where bunch grasses and forbs are predominant, the thinnings proposed by this alternative would present only a minor change in foraging habitat.

Because only a limited number of trees would be removed from the forest stands, only minimal effects to cavity-dependent wildlife species would ensue. Inasmuch as fewer trees would be thinned under Alternative 2, a greater number of trees would be available to create snags. However, because of the resultant limited opening of the forest canopy, the growth of remaining trees would not be stimulated to the degree expected in Alternative 1. Therefore, the diversity of cavity-dependent wildlife species would remain the same or may increase slightly.

Riparian area seeding would have insignificant impacts to wildlife in the area, all stemming from disturbance caused by seeding operations. Neotropical migratory birds species that currently occupy the area would continue to do so.

Accipiter surveys were conducted in the forested stands of Courtney Creek over the course of 2 years, but no northern goshawks or other accipiters were detected. Goshawk foraging habitat would be created by opening the canopy of the existing stands and leaving downed woody material for use by prey species. The remaining closed canopy stands potentially would provide nesting habitat.

Other wildlife species located in the area would be effected minimally by the operations and habitat modification in the Courtney Creek area undertaken pursuant to Alternative 2. Disturbance would be short term, however, and most of the wildlife species that exist in the area are generalists in habitat use and are not dependent on the specific habitat types in the locality.

5. Cumulative Effects

Alternative 2 would involve the restoration of fewer miles of stream habitat than would Alternative 1, which may result in a longer recovery period. The timber harvest activities under this alternative are less likely to cause additional water quality problems than are the activities proposed under Alternative 1, due to the relative sizes of the treatment areas. Also, planned mitigation measures immediately would start restoration of vegetation in many areas, creating an upward vegetative trend over time. Further, this alternative addresses areas with water quality problems and prevents additional downstream impacts.

C. Effects of Alternative 3 - No Action

1. Fish Habitat/Water Quality

Under Alternative 3, no new management actions would be initiated in the Courtney Creek area. No trees would be cut and no riparian areas would be restored. Fish habitat, riparian areas, and water quality would improve slowly through as a result of implementation of existing management direction. The RMP provides guidance for improving fish-bearing streams, riparian areas and water quality. The project area supports federally listed fish species which, by law, demand protection and habitat restoration.

Diseased trees would continue to infect other trees and stands. Subwatershed stands would loose cover, stability and shade over time, potentially creating additional down-cutting and loss of spring and wetland habitat contained within those stands.

Issues

Fish Habitat

Fish habitat could slowly improve as current management direction is implemented. LWD placement would occur as dead trees fall into the stream, and streambanks would be restored slowly over time. Shade also would increase proportionately with the growth of streamside trees. Sediment from down-cut streams would continue to be problematic for an indefinite period of time until some large wood comes into the system or areas are stabilized by vegetation recovery. Importation of boulders and cobbles into the riparian areas of Courtney Creek and the Grande Ronde River would continue from Little Courtney, Shuman Canyon and other tributaries with bare-soil streambanks and continual down-cutting. This area has a history of natural events from fast snow melt that has resulted in down-cutting. This would continue in many areas before streambank restoration occurs. In-stream habitat in Courtney and Little Courtney is lacking pools and the associated hiding cover for fish. Fine gravel is lacking for spawning purposes. Much of Little Courtney and main Courtney Creek (on private land) will continue to run sub-surface until streams stabilize.

Riparian Areas

Although some riparian areas would begin to recover as current management direction is implemented, many such areas would continue to lose the water table and wetland habitat as streams continue to unravel and down-cut. Shade loss in riparian areas may continue as young hardwoods fail to re-establish in the face of heavy utilization by deer and elk, the continual boulder/cobble movement which retards establishment of streamside hardwoods, and lack of LWD in those areas.

Water Quality

Water quality ideal for fish habitat is presently not being maintained. Information collected on Courtney Creek indicates low dissolved oxygen (5.4 in 1999), high phosphates (0.38 mg/l in 1999) and high stream temperatures (69.9 for the 7 day max/average). Poor water quality may be due to farming on private land in headwater vicinity. Some improvement may be expected over time as vegetation is restored to riparian areas and shade is restored by hardwoods and conifers. Without seeding and LWD placement, it would be expected that dissolved oxygen would remain low for many years and stream temperatures would remain the same until the channels are reestablished. The streams will bear the same water quality until nature is allowed to recreate vegetation and stability within stream channels. However, for the immediately foreseeable future, the stream channels will continue to be unstable with no proposed restoration of RCAs.

No thinning would be undertaken in the uplands or in the RCAs. There would be no reduction in fuels, and insect and disease problems currently impacting the forest stands would continue and most likely worsen. No temporary roads or landings would be built on private land adjacent to the BLM-managed land. No changes to current peak and/or base flows from timber harvest and/or road building would occur. There would be no increase in sediment due to timber harvest activities and/or LWD placement in the streams.

No LWD would be placed into the stream, and no riparian seeding would take place. The current lack of LWD in the streams would continue until trees currently standing along the stream channel died and entered the stream channel naturally. Native grasses and sedges would become further established slowly and naturally by spreading from the few project areas currently supporting these species.

2. Forest Health/Old Forest

There would be no commercial thinning or pre-commercial thinning in the upland areas or RCAs pursuant to this alternative.

a. Forest Insects

Tree densities would remain high, and would slowly increase over time as stands grow. Infected trees within these stands would continue to grow slowly, and susceptibility to bark beetle attack would continue to be a problem.

b. Forest Disease

Dwarf mistletoe infection levels would remain high. Dwarf mistletoe would spread slowly to uninfected trees, continue to slow tree growth, and cause increased susceptibility to bark beetle attack.

c. Old Forest

No large trees would be removed, so there would be no effect to old forest stands.

3. Wildfire/Fuels

No treatment activities would be taken within the forested stands pursuant to Alternative 3. Although there are other tree and shrub species present in the proposed project area, these sites are predominately Douglas-fir/ninebark associations. As previously discussed, this association typically has a long interval between fire events, and fires are usually stand replacing in nature. Neither Courtney nor Little Courtney Creek drainages have experienced a major wildfire since the early 1900's. A no-action alternative will allow the current overstocking of young Douglas-fir to continue and mistletoe infection levels and bark beetle activity to increase. Ultimately, this will result in the mortality of a significant percentage of trees in these stands. These factors would all contribute to a potential stand replacing wildfire that could be more intense than these sites have experienced in the past. A large fire could and most likely will occur at some point in the future. Proposed management actions under Alternatives 1 and 2 would not prevent such a fire event in these canyons, but could reduce the intensity and effects to resources. No Action essentially would ensure a future fire with more severe effects to these sites than desired. Rehabilitation efforts probably would be necessary due to potential soil erosion on steep slopes, loss of wildlife cover and habitat, and risk to water quality and fisheries in

designated threatened fish species habitat. Recovery of these sites could be quite lengthy and, indeed, longer than it might have been prior to the advent of aggressive fire suppression, livestock grazing and other human-influenced factors that occurred during the 20th century and contributed to current conditions.

Conversely, these drainages have not burned for decades, and may not do so for some time. With current management direction stressing aggressive fire suppression, the project area may not experience more than an occasional single tree fire from a lightning strike, possibly with a small grass fire underneath, before suppression action is taken that keeps the fire to less than an acre. Even so, these canyons will always be at risk for a major fire of significant size and intensity. This type of fire will remove almost all forested stands involved in the fire, thinned and unthinned, and nature will start the process all over again.

4. Wildlife Habitat

There would be no direct effects to wildlife in the Courtney Creek area associated with the No Action Alternative. There would be no tree removal, no road construction or reconstruction, no seeding, and no riparian treatments. The wildlife in the area would remain undisturbed.

The potential for a catastrophic stand replacing fire in the Courtney Creek area would remain relatively high. Current tree density levels and shrub growth have the potential to carry a fire through each of the forest stands in the area quickly and intensively. As exhibited in other burned-over areas in the watershed, crown fires would occur through the stands, completely consuming the trees and shrubs in those stands. This would represent a long-lasting and dramatic effect to wildlife in the area. Thermal cover would be completely lost, and forest-dependent wildlife species would be displaced. Because there is a relatively small amount of this habitat type in the watershed, the importance of the other forested habitat in the area would become higher for these wildlife species, and the numbers of these species in the area would decrease.

With a stand replacement fire, it is expected that an increase in the amount of snags and down woody material would occur. This would potentially cause an increase in the number and diversity of cavity-dependent wildlife species in the area. An initial decrease in species numbers and composition is likely to occur, however, and low populations likely would persist for approximately 10 years before these wildlife species would increase.

5. Cumulative Effects

The No-Action alternative, over time, will restore some of the stretches of streams that support fish, improve riparian habitat and water quality. In some areas, stream channels are severely down-cut or riparian areas are buried in boulder/cobble. These areas will not be restored in the short term without restoration work. Many streams will continue to erode. Through the implementation of current management direction, vegetative restoration will begin; however, without specific restorative action, many years will pass before the riparian areas and stream channels would be restored. Further, one would expect these streams to continue to contribute boulder/cobbles and warm water downstream into the river until some of these channels stabilize. Forest health would continue to deteriorate under this alternative.

D. Mitigation

1. Mitigation Measures Common to Both Action Alternatives

Timber felling would be done by hand, and the limbs and tops would remain attached to the logs during yarding operations. Yarding would be done with helicopters to landings sited on privately-owned land on flat areas above the BLM lands. Yarding with a helicopter would ensure that trees are not yarded across the ground, thereby protecting remaining vegetation and soil from disturbance and reducing the likelihood of creating bare soil areas where erosion could be a problem. The limbs and tops would be severed from the logs at the landings. All of the logs, down to a 3" diameter top, would be hauled off of the project area. Timber hauling would be restricted to the dry season or during the winter when the

road surface is frozen. This seasonal restriction would minimize or eliminate soil destruction, erosion, and stream sedimentation. The limbs and tops would be piled on the landings, which would be 1-2 acres in size in order to accommodate helicopter logging. Landing piles would be burned, in accordance with state smoke management regulations, in late fall or early winter after logging is completed. The landings then would be ripped and seeded with a species mix that the landowner prefers. Areas with potentially unstable slopes would be excluded from the thinning areas. The standard design features for forest management operations listed on pages 37-40 of the Baker ROD would be implemented.

Snags, down logs, and large green trees are important for wildlife habitat and maintaining long-term site productivity. To meet RMP objectives for cavity-nesting wildlife species and to mitigate potential wildlife impacts, 30-45 live trees and all existing snags would be retained where possible. During the helicopter yarding operations, a small number of snags may need to be felled for safety reasons. Felled snags would be left in place and become down wood. Following thinning operations, if large snags are deficient in the area, large green trees may be girdled at the base to create additional large snags. Where available, 5-10 down logs greater than 12" in diameter and 20' in length would be retained. In areas with fewer than 5 down logs per acre, additional trees may be felled following timber harvest operations to meet coarse woody debris objectives. Logs would be at least 20' in length with the small end being 12-17" in diameter. Within the thinning areas, all green trees greater than 21" dbh would be retained.

Riparian Conservation Areas (RCAs) would be used to protect and enhance riparian values. The boundaries and buffers would be established using ICBEMP and PACFISH criteria, whichever affords greater protection. The boundaries that would be used in this project are 300' on perennial and fishbearing streams, and 120' on intermittent streams. Within the RCAs, native grasses such as blue wild rye, basin wild rye, bluebunch wheatgrass and/or canary reedgrass would be seeded on bare soil areas near actively eroding stream channels. Further, sedge and juncus spp. also would be seeded within 10-15 ft. of the stream channels.

Within the project area, the only road located on BLM land is in the main Courtney Creek drainage. This road would not be used in furtherance of project activities. All of the roads over which logs would be hauled are private, county, or state-owned. The privately-owned roads used to haul logs would be surface bladed when necessary to mitigate erosion potential. Approximately 1000 feet of new road would need to be built through pastures located on the privately-owned lands on flat areas above the BLM lands. The siting of the road on flat terrain would serve to mitigate soil impacts.

Up to six landings, each 1-2 acres in size, would be constructed on private land on the flats above the project area, which, along with the proposed road, would result in a total disturbance area of no more than 13 acres. No single area of disturbance would exceed 2 acres in size so as to mitigate potential soil, riparian and wildlife impacts. Further, the proposed site of the new road and landings are along ridgetop/flat areas that do not cross any streams, draws, or springs. Due to the location of the landings and new road, and the facts that a) there is no direct conduit for surface erosion to reach any stream channel; b) the landing areas are surrounded by vegetated ground that will capture any surface runoff; and c) these areas will be ripped to reduce compaction and then seeded after project completion, no significant increase in sediment would occur from these activities.

During project implementation, project design features would be monitored to assure compliance. Upon project completion, monitoring would be conducted to determine whether objectives were met. Stream temperature monitoring of Mud Creek and Courtney Creek before, during, and after project implementation would take place. Monitoring of LWD placement in the stream channels would be conducted to ensure that the structures are stable and providing protection to the streambanks and also providing aquatic habitat.

It is anticipated that noxious weeds will become established at the helicopter landings located on private lands. These landings will be monitored for 5-7 years following use. Noxious weeds would be treated in accordance with the Vale District Weed Management program.

Potential impacts to cultural resources now known or identified in future surveys or by any contractor will be mitigated by avoiding these resources during the course of proposed activities.

2. Alternative 1

Additional mitigation measures used to mitigate against adverse potential environmental impacts of the proposed activities are as follows:

In order to mitigate potential effects to riparian areas, the cutting of trees within the RCAs for LWD input and pursuant to thinning activities would be restricted to the area between the streambank and 150' upslope. No trees currently contributing to bank stability would be felled.

During the course of treatments, the largest, healthiest trees with the best and largest shade-providing crowns would be retained, and the thinning and tree felling for LWD would be spread out across approximately 1.4 miles of stream so as to prevent or minimize measurable impacts to stream temperatures. Further, the thinning and felling would be conducted mostly on northerly slopes, so removal of some trees would not result in as great an increase in insolation as if the trees were removed from westerly or southerly slopes. Moreover, because the thinning and tree felling along the two perennial streams in the project area would not be concentrated in one area and would not create large openings in the canopy, less than 10% of the RCAs would have activity in them, and the location and orientation of the treatments would minimize any increase in direct solar radiation, any decrease in shade or increase in stream temperatures should be negligible.

Seeding in the RCAs would help establish native grasses, sedges, and juncus spp. that are currently absent from the area or are only minor components. Establishment of this vegetation along the streambanks and on the floodplains would help stabilize banks that currently are eroding, help capture sediment during high flows that would contribute soil and nutrients to the floodplain, and reduce some of the adverse impacts that can happen during flood events.

3. Alternative 2

Additional mitigation measures used to mitigate against adverse potential environmental impacts of the proposed activities are as follows:

No trees would be thinned and no LWD would be placed within the RCAs. This mitigates against potential soil erosion and resultant stream sedimentation, increased short-term stream temperatures, and minor sedimentation associated with LWD placement.

Alternative 2 entails restoring stream habitat by seeding. This would promote immediate restoration of the channel and possibly help the existing water quality problems. Seeding also would promote the capture of sediment over time as vegetative recovery occurs.

4. Alternative 3

No actions, including mitigation measures, are proposed.

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V. CONTACTS, CONSULTATIONS and PREPARERS

This chapter contains a summary of Agencies, Organizations and Persons consulted, anticipated future public notification and a list of preparers.

A. Agencies, Organizations and Persons Consulted

1. An initial planning letter was mailed by the BLM to a list of 89 individuals and organizations representing adjacent landowners, environmental groups, user groups, other Federal, State and Local agencies. Letters were also sent to the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe. A copy of the letters and mailing list is contained in the Courtney Creek Forest Health Project EA case file stored at the Baker Resource Area offices in Baker City, Oregon. These documents are available for public review.
2. Don Scott and Craig Schmitt, of the Pacific Northwest Research Station were consulted. Their findings are documented in letters dated September 30, 1996 and December 18, 1997. A copy of the letters are in the analysis file.
3. The Courtney Creek Forest Health Project was included in the Schedule of Proposed Actions located on the Vale District website.
4. Oregon Department of Fish and Wildlife, Enterprise District Office, was consulted.

B. Future Public Notification

1. A 30 day public comment period will be established for review of this EA and the associated finding of no significant impact (FONSI). A notice of availability of these documents will be published in the La Grande Observer.
2. All parties who responded to the initial planning letter will receive copies of environmental documents if so requested. The EA will be sent to the Confederated Tribes of the Umatilla, and the Nez Perce Tribe for their review.
3. Current grazing lessees will be notified of the availability of EA and FONSI.
4. A notice of decision will be published in the La Grande Observer if the decision is made to implement the project.

C. List of Preparers

Dick Watson, Baker Field Office, Team Lead/Forestry
Mary Oman, Baker Field Office, Cultural Resources
John Denney, Baker Field Office, Soils/Hydrology
Mike Woods, Baker Field Office, Fuels/Fire Ecology
Jackie Dougan, Baker Field Office, Fisheries
Greg Miller, Baker Resource Area, Wildlife
Teresa Smergut, Baker Field Office, Range
Todd Kuck, Baker Field Office, Hydrology
Scott Rotman, Baker Field Office, Environmental Protection

FINDING OF NO SIGNIFICANT IMPACT

Courtney Creek Forest Health and Riparian Restoration Project Environmental Assessment OR-035-00-5

**Baker Resource Area
Vale District
Bureau of Land Management
Baker City, Oregon**

The Baker Resource Area of the Bureau of Land Management (BLM) Vale District has analyzed a proposal for the Courtney Creek Forest Health and Riparian Restoration Project. The proposed project sets forth land treatment activities designed to improve the health of forest stands and riparian areas while protecting other resource values. The attached Environmental Assessment (EA) OR-035-00-5 contains a detailed description and analysis of two action alternatives and a no action alternative. This EA was prepared under the guidance provided by the Baker Resource Management Plan Record of Decision (ROD)(July 1989).

On the basis of the information and analysis contained in the EA, I have determined that there will be no significant impacts resulting from the proposed action. In relation to context, the project's affected region is localized and the effects of implementation are relevant to the area affected by the activity plan and the people inhabiting the area. This is particularly true in light of the comprehensive mitigation measures adopted into the project specifications. In relation to intensity or severity, said mitigation measures have been promulgated to protect public health and safety. Further, no unique characteristics are involved, there is no apparent controversy about the quality of the human environment, there are no highly uncertain, unique or unknown risks, and the project does not set a precedent for future actions that could have significant effects. The action also does not appear to be related to any other action that could be significant, there will be no impacts to sites that could be listed on the National Register of Historic Places, no scientific, cultural or historic resources will be lost, and there will be no violation of any law or requirement protecting the environment. There will be no significant impacts to any species listed under the Endangered Species Act, although it should be noted that the National Marine Fisheries Service (NMFS) and the United States Fish & Wildlife Service (FWS) have rendered only informal conferencing with BLM's "may affect, not likely to adversely affect" determination. In the event that concurrence is not forthcoming, the proposed plan will be amended in accordance with NMFS and FWS directives.

The proposed action includes mitigation measures, derived during the course of effects analysis, that will reduce the potential environmental impacts of the proposed action. I have determined that, so long as these mitigation measures are followed, and monitoring procedures are utilized, implementation of the actions associated with the proposed project will not cause resource degradation. While any land management activity invariably and by definition entails environmental effects, I have determined, based upon the analysis of environmental impacts contained in the referenced EA (OR-035-00-5), that the potential impacts raised by the proposed project will not be significant and that, therefore, preparation of an environmental impact statement is not required.

Penelope Dunn Woods
Baker Field Manager
Baker Resource Area, Vale District

Date